



Canadian Environmental
Assessment Agency

Agence canadienne
d'évaluation environnementale

REVIEW OF THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT

Background Study

ON-GOING MONITORING PROGRAM OF THE
CANADIAN ENVIRONMENTAL ASSESSMENT ACT



**On-Going Monitoring Program
of the
Canadian Environmental
Assessment Act**

- Final Report -

Prepared for:

On-Going Monitoring Committee:
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Executive Summary

Environmental assessment (EA) is a powerful tool to help decision-makers achieve the goal of sustainable development. Yet, if EA legislation, regulations or operational policy practices are not as effective and efficient as they could be, the contribution of EA to sustainable development might be compromised.

The *Canadian Environmental Assessment Act* (the Act) was proclaimed on January 19, 1995, as the federal framework for EA. A stated objective of the Act is "to encourage Responsible Authorities to take actions that promote sustainable development, thereby achieving or maintaining a healthy environment and a healthy economy." As a relatively new statute, significant efforts are being devoted to ensuring it is both effective and efficient.

The On-Going Monitoring Program (OMP) is designed to facilitate continuous improvement of the Act. The OMP acts as a tool for continuous improvement, by revealing where the Act and the regulations and operational policy practices under it are functioning well, and where reforms could be beneficial. The overall intent is to ensure that the Act operates effectively and efficiently, thereby providing the greatest benefits without imposing undue costs.

The OMP does this by monitoring the societal benefits generated by the Act and the costs and benefits of the Act to industry. Based on this information, improvements to the Act, its regulations and operational policy statements are identified.

The OMP relies on detailed case studies, verification and analysis of actual experiences with the Act. The verification and analysis of these experiences ensure that they can be used with confidence in making policy decisions and setting directions for reform. Through these verified experiences and analyses, the OMP provides a comprehensive characterization of the Act's impacts in terms of:

- Causal relationships between the Act and observed costs and benefits;
- Significance (materiality) of the costs and benefits; and
- Specific elements of the Act, regulations and operational practices that give rise to the costs and benefits.

This report documents the first application of the OMP methodology. The Business Impact Test (BIT) and the Business Impact Cost Accounting Protocol (BICAP) were the main tools used to monitor the impacts of the Act on industry. Perspectives Benefit Analysis (PBA) was used to monitor and evaluate the benefits of the Act. Perspectives Benefit Analysis combines case study information with existing literature of environmental benefits to develop a plausible benefit scenario. The scenario identifies the likely magnitude of potential benefits and whether it is most likely that the benefits of an EA are (i) much smaller than the costs, (ii) comparable to the costs, or (iii) much larger than the costs.

Many of the projects reviewed by the OMP were initiated at or around the time the Act was enacted. As a result, one would expect to see a lot of inefficiencies as various players learn their roles and responsibilities while applying the Act for the first time.

In fact remarkably few cases (15%) were identified where proponents incurred any significant costs without commensurate benefits as a result of triggering the Act. *In fact, almost without exception, all stakeholders felt strongly that the Act provided a range of benefits commensurate with its costs, whether acting on its own as the primary regulatory driver of EA or in conjunction with provincial requirements.*

The reader should also keep in mind that case studies presented in this report represent a snapshot of the performance of the Act over the last five years. Some of the issues raised have already been acted upon by the Canadian Environmental Assessment Agency (the Agency) and these actions are noted.

Societal Benefits Summary

The OMP identified three classes of *societal benefits* associated with the Act. They are process benefits, study benefits and outcome benefits. Each contributes toward realizing sustainable objectives.

Process benefits are realized where the Act provides an effective/efficient framework for integrating environmental considerations with project planning. Results of the OMP study indicate that stakeholders interviewed felt that the Act played a significant role in realizing process benefits where:

- *Exclusion List Regulations* added certainty for proponents, reducing the number of unnecessary EAs;
- *Early application of EA* allowed for the consideration of alternatives before irrevocable decisions were made;
- *Linking projects* under the same EA reduced proponent study costs & RA review and approval costs;
- *Harmonization* reduced reporting requirements and provided a single forum for review thereby reducing RA costs;
- *Project start-up delays* were minimized through the participation of RAs during scoping and EA preparation (*delegation of responsibilities*); and
- *Public registries* ensured public participation.

Study benefits driven by the Act lead to improvements in assessment quality and/or a reduction in assessment costs. Most stakeholders interviewed by the OMP indicated they felt that the Act's guidelines and operational policy statements helped to ensure EA quality for all three levels of assessment. *In fact a number of interviewees observed that the Act had set the standards to*

which some provincial processes were evolving. The OMP identified the following requirements as key to driving study benefits in the case studies developed:

- *Scoping* focused the EA and provides a common terms of reference for the RA and proponent;
- *Significance* helped EA scoping and focused mitigation measures on important impacts; and
- Use of *previously conducted EA's* reduced assessment costs for proponents.

Outcome benefits are the environmental impacts avoided in the assessment or mitigated during project implementation. Results of the OMP study indicate that the Act can be a primary driver of these benefits where it is the only regulatory requirement for EA. Follow-up activities are particularly important for realizing outcome benefits. Since there is no mechanism to enforce follow-up at the provincial level, this section of the Act is currently the only means of ensuring compliance with EA approval conditions that fall outside of permitting. Outcome benefits were identified in 50% of case studies examined. Multiple, overlapping EA requirements and regulatory conditions for joint panels studies precluded the Act playing any *incremental* role in other case studies developed by the OMP. Requirements of the Act driving outcome benefits include:

- Consideration of *alternatives* which allow proponents to avoid impacts, thereby reducing project costs;
- *Mitigation measures* reduced or eliminated adverse project effects thereby promoting sustainability; and
- *Follow-up* ensured the implementation of mitigation measures and public reporting
- *Section 16(1)(a)* promoted the development of emergency response plans during project operations.

Perspective benefits analysis helped to demonstrate that outcome benefits were generally commensurate with the costs associated with conducting the environmental assessment. This conclusion was supported through the development of a number of benefit scenarios.

Cost Summary

The Act's impacts to business were a chief concern and a point of investigation in the OMP. To this end three types of EA costs were identified; assessment costs, project start-up costs and project implementation costs. To understand how the Act functions as one of several regulatory drivers of EA total assessment costs were compared to incremental costs driven only by the Act. Results indicated the following:

- (i) *Assessment costs were not significant for proponents, but varied with risk and project type*

The role, and therefore costs, of assessment changes for different types of projects. EA's play a much more significant part in projects involving natural resource management. For instance, screening on average were 2.9% of capital costs. Relative costs increased to

7.6% and 13.4% of project capital costs for assessments involving natural resource management. None of the proponents interviewed for any of the twenty case studies developed considered assessment costs to be unreasonable. Comprehensive studies and Panel EAs averaged 3.1% and 1.5% respectively. None of the proponents interviewed considered assessment costs to be a significant business impact.

- (ii) *The Act was a primary driver of assessment costs for most screenings and some comprehensive studies*

The Act was a primary driver of assessment costs and requirements for 7 out of 10 screenings and 2 out of 6 comprehensive studies. As one moves to comprehensive studies and panels there is an increasingly multi-jurisdictional context driving assessment. As a result the OMP found that fewer costs could be attributed to the Act. Those costs identified at the level of screenings and comprehensive studies were not considered to constitute a significant business impact by proponents.

- (iii) *The Act increased incremental assessment costs between 0.6% and 37.1%*

OMP results indicated that where the Act acted in conjunction with other regulatory drivers of EA its incremental ranged between 0.6% to 37.1% of assessment costs. These costs tended to reflect the Act's "value added" to the assessment above and beyond provincial requirements (i.e. that is the consideration of cumulative effects, public consultation, emergency response plans, alternatives). They did not represent inefficiencies such as additional reporting requirements imposed by the Act.

- (iv) *Project start-up costs to proponents were potentially the most significant impact to competitiveness*

Project start-up costs occurred when some aspect of the Act was mismanaged during the assessment process. These were identified by the OMP as being the one potential significant business impact resulting from the assessment process. As a result of delays in approval proponents risk:

- putting loan repayment schedules at risk with delays in production (most large projects are financed through major loans with credit institutions);
- lost production time and therefore lost profits;
- missed market peaks in the prices of the resource to be extracted and therefore a loss in profit;
- retainers to consultants to ensure their ongoing availability;
- retainers to contractors to keep them ready for project start-up at the site;
- payments to contractors for equipment removal where seasonal windows for construction are missed as a result of delays;
- higher risks and liabilities associated with mine sites that are no longer active, but haven't been decommissioned; and
- for the public sector, delays resulted the project being implemented during another fiscal period where there were more limitations on the provincial budget.

At least one case study at each level of assessment identified instances where the proponent incurred significant costs as a result of poor scoping decisions and/or lack of RA involvement during EA report preparation. For these case studies the recent promulgation of the Act and RA uncertainty over its implementation was a significant contributor to costs. Proponents and RA's interviewed stated that they expect these costs to disappear as various stakeholders apply lessons learned and the Agency continues to develop guidelines / operational policy statements that clarify uncertainties.

(v) *Project implementation costs represented the Act's role in mitigation and follow-up and therefore its contribution to sustainability*

Given the complex regulatory framework that exists for large-scale projects under panel review, the Act's role virtually disappears as a driver of cost during implementation. Driven mitigation measures identified at the screening and comprehensive study level of assessment tend to be those not driven by the Fisheries Act. *These costs reflect the Act's value added to sustainability since they represent adverse impacts associated with development that fall outside of existing regulation.* Follow-up costs include additional studies, environmental monitors and compliance costs necessary to ensure the effectiveness of mitigation measures and/or unforeseen impacts identified during project implementation.

Recommendations

In summary, after reviewing 20 case studies the OMP has identified 37 recommendations aimed at:

- Proposed policy reforms (that is improvements to regulations, guidelines and/or operational policy statements of the Act);
- Improved management of the Act's implementation; or
- Issues requiring further investigation.

Proposed Policy Reforms

The largest number of recommendations were focused on either revising the Responsible Authority's Guide or developing sectoral guidelines to assist line departments with EA implementation. Additional policy reforms were directed at developing exclusions list, operational policy statements and improving harmonization agreements. These are summarized below:

- (i) *Revise the Responsible Authority's Guide:* The Guide is considered an important tool by RA's and proponents for the preparation and management of EAs triggered by the Act. Suggested improvements to the guide included revisions that focus on:
- Clarifying the concept of *self assessment* at all three levels of assessment. Self assessment should also be linked to the delegation of RA responsibilities during EA preparation and the implications for super-added responsibilities taken on during follow-up.

- Requiring that persons with *assessment expertise* to be involved in scoping decisions as well as with other aspects of the EA's preparation and review.
 - Providing more information on *permitting triggers* including: the range of triggers, the types of projects usually affected by these permits, the criteria used by RAs to determine whether or not they apply and subsequent incremental reporting responsibilities imposed by the Act.
 - Clarifying *bump-up criteria* and information needs used for decisions to related to holding Panel reviews.
 - Creating a "*pre-scoping phase*" where the RA and/or the Agency advises the proponent on early stages of a projects conceptualization and impacts on EA scoping decisions (i.e. the likelihood of permitting triggers).
 - Requirements for the RA or the Minister of Environment to formally document, at scoping, *project policy boundaries* that guide the development of the EA and set the boundaries for review.
 - Requiring RAs to provide a clear written public statement at scoping on their rationale for *linking projects* (or not) under a single review.
 - Promoting proactive *delegation of RA responsibilities* with regard to (a) providing ongoing assistance to proponents during EA scoping and preparation; (b) coordinating the input of other federal and provincial authorities during this period; (c) setting reasonable timelines for each stage of the review; and (iv) co-ordinating feedback to the proponent during review and approval.
 - Providing more direction on information requirements of Section 16 of the Act and the relationships between these established in the assessment. In other words when does a proponent have to collect information on biophysical effects? How is this information linked to determining the significance of effects? What links should the assessment make between effects, mitigation measures and proposed follow-up measures? The Guide should also distinguish between reporting requirements for small versus large screenings and provide decision criteria for determining which is which.
 - Linking *follow-up* with the concepts of verification and continuous improvement and reporting to the public.
- (ii) *Develop Sectoral Guidelines:* The Agency should develop sectoral guidelines in consultation with line departments to better address their EA needs. They should focus on *all* the issues recommended for the *Responsible Authority's Guide* as well as paying particular attention to:
- Addressing *permit issues* related to various classes of projects; referencing "inclusion list regulations" developed by RAs for projects that consistently invoke permitting triggers as well as criteria used by RAs to determine conditions under which other projects potentially invoke permit triggers.
 - Address *super-added responsibilities* at all three levels of assessment, targeting roles and responsibilities from the project manager's perspective.
 - Identifying examples of *cumulative effects* for various classes of projects in each sector.

- Promoting the benefits of verification for continual improvement and the link to *class EAs*.
 - Identifying the types of activities permissible for proponents to undertake while preparing EAs for decommissioning projects.
- (iii) *Revise Exclusion Lists:* Projects carried out in the interest of preventing property / environmental damage, or to meet public health/safety objectives should be reviewed for the *Exclusion List Regulation*. Projects identified should meet a number of criteria such as the fact that they: (i) are carried out in response to existing regulations such as the AZR, (ii) cause insignificant environmental damage, and (iii) are carried out on a routine basis. Projects meeting these criteria could be placed on the *Exclusion List Regulation*. RAs could then work to identify more appropriate environmental management tools to deal with the impacts of these activities.
- (iv) *Develop Operational Policy Statements:* The Agency should develop an operational policy statement that identifies criteria and/or classes of projects that constitute emergencies as described under the Act.
- (v) *Manage Harmonization Agreements:* The Agency and the provincial EA authority in B.C. should allow each process to continue on a separate track at the recommendation period.

Improved Management of the Act's Implementation

Another set of recommendations is focused at improving the management of the Act to ensure that a greater range of benefits is realized through the EA process. The OMP identified the need for training and further promotional activities to improve RA project managers understanding of the Act. Management recommendations also focused on strengthening the role of the Agency and challenges to conducting Joint Panels.

- (i) *Promotional/Communication Strategy:* The Agency should strengthen its' communication strategy for promoting the Act as well as any new regulations, guidelines and operational policy statements.
- (ii) *Develop Training Courses:* The OMP identified also training as key to promoting a greater understanding of the Act and its requirements. Recommendations were made specifically with regard to developing training programs that:
- Target RA project managers.
 - Improve the ability of Panel chairs to divert policy issues from project reviews.
 - Explore the concept of self assessment and its links to the delegation of RA responsibilities and super added responsibilities taken on by the RA for all three levels of EA.

- Emphasize the importance of having persons with assessment expertise involved in scoping decisions as well as other aspects of the EA's preparation and review.
- Focus on the concept of follow-up, emphasizing the importance of verification, continual improvement and the communication of results with the public (including documentation needs).

(iii) *Strengthen The Role of the Agency:* The OMP also identified a stronger role for the Agency in:

- Ensuring that *super added* responsibilities are met by proponents at the comprehensive study level and in panel reviews.
- Working with RAs and Environment Canada to identify ways of *capturing EA information* for continual improvement and the development of class EAs.
- Promoting the concept of class EAs with the role of follow-up activities for verification.
- Providing some sort of early warning system for new types of projects and facilitating resolving jurisdictional issues related to super added responsibilities.

(iv) *Improve Joint Panel Reviews:*

- Memorandums of Understanding for Joint Panels should include provisions for conditional approval with the caveat that they only be provided where the RA is provided with an opportunity to maintain some level of oversight until these conditions are met.
- The NEB should set up a separate division within the Board to take on the full functions of RA's as intended under the Act.

Issues Requiring Further Investigation

Finally, the OMP identified three areas that require further investigation before deciding upon any one course of action. Specifically the Agency should:

- Study implications of automatic bump-up to harmonize joint federal/provincial EA reviews.
- Investigate the merits of ensuring that follow-up activities fall to those department's with mandated responsibilities for managing the impacts in question rather than the lead RA. This leaves the RA with taking additional responsibilities that fall outside of other departments jurisdiction.
- Investigate the merits of Panels flagging policy issues during public reviews. The Agency could identify whether or not these issues (i) dealt with environmental regulations or policies, and (ii) whether or not a cabinet decision had been made or if public consultation had been carried out. A refined list of policy issues could then be sent to the Commissioner of Environment and Sustainable Development for further consideration.

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GLOSSARY OF TERMS

ATIA	Access to Information Act
The Act	Canadian Environmental Assessment Act
Agency	Canadian Environmental Assessment Agency
BICAP	Business Impact Cost Analysis Protocol complements BIT by providing a formal interview approach to verify how regulations interact with business functions, and an accounting standard and formal method for estimating the incremental costs of regulations or changes in regulations.
Characterize	The OMP seeks to "characterize" the impacts of the Act. Characterizing impacts involves: 1) identifying their existence; 2) establishing a causal link to the Act; 3) identifying the specific program element that gives rise to the impact; and 4) assessing the materiality of the impact.
BIT	Business Impact Test is a process for consultation and analysis of the impacts of regulation on business ¹ .
Program Elements	This includes the Act, regulations under the Act and operational practices developed to apply the Act and regulations. Operational practices include guidelines, administrative procedures, etc.
EA	Environmental Assessment: EA is an anticipatory, participatory, integrative environmental management tool which has the ultimate objective of providing decision makers with an indication of the likely consequences of their decisions relating to new projects or to new programs, plans or policies. The ultimate objective is to make decisions/actions more sustainable by reducing environmental disbenefits. EAs do this by providing a systematic approach for identifying the environmental effects of proposed projects before they occur. By doing this EAs allow decision-makers to modify plans so that the effects can be minimized or eliminated, thereby reducing/avoiding downstream costs and impacts.

¹ More information on BIT can be obtained from <http://strategic.ic.gc.ca/bit> or <http://strategic.ic.gc.ca/tie> (French).

Federal Authority	"Federal authority" means (a) a Minister of the Crown in right of Canada, (b) an agency of the Government of Canada or other body established by or pursuant to an Act of Parliament that is ultimately accountable through a Minister of the Crown in right of Canada to Parliament for the conduct of its affairs, (c) any department or departmental corporation set out in Schedule I or II to the Financial Administration Act, and (d) any other body that is prescribed pursuant to regulations made under paragraph 59(e)
Materiality	This term is used to describe the significance of information to decision-makers. An item of information, or an aggregate of items, is material if it is probable that their omission or misstatement would influence or change a decision. Materiality is a matter of professional judgement on a case by case basis.
OMC	On-Going Monitoring Committee
OMP	On-Going Monitoring Program
Perspectives Benefit Analysis (PBA)	This is a method used to determine whether the potential benefits of an environmental assessment are likely to be small, commensurate, or large relative to identified costs. Plausible benefits scenarios are developed from observed project modifications and applied appropriate valuation estimates (e.g., from the available economic literature).
RA	"Responsible Authority", in relation to a project, means a federal authority that is required pursuant to subsection 11(1) to ensure that an environmental assessment of the project is conducted;
Societal Benefits	Benefits arising from the Act to individuals, communities and society as a whole.
Sustainable Development	"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (the Brundtland Commission, Auditor General's Act). Sustainable development provides a framework for the integration of environmental policies and development strategies. It recognizes that development is essential to satisfy human needs and improve the quality of life. But development must be based on the efficient and environmentally responsible use of all of society's scarce resources – our natural, human, and economic resources.

1 Introduction

This is the final report summarizing the findings of the Ongoing Monitoring Program (OMP) for the *Canadian Environmental Assessment Act*. The study was conducted to assess the performance of the Canadian Environmental Assessment Act as part of the five year review. It was commissioned by the Ongoing Monitoring Committee which is composed of representatives from the Canadian Environmental Assessment Agency, Industry Canada, Environment Canada, and Natural Resources Canada.

The objectives of the OMP are to:

1. Monitor the societal benefits (economic, environmental and social) resulting from the application of the Act, especially its contributions to sustainable development.
2. Monitor the impacts (costs and benefits) on industry resulting from the substantive requirements, administration and management of environmental assessments under the Act.
3. Recommend improvements to the Act (its regulations and operational practices) that reduce its associated costs while maintaining its benefits, and enhance its benefits without imposing undue costs.

Results are based on an extensive review of environmental assessments (EAs) conducted for 20 different projects. The approach taken was to develop case studies on each project. Each case involved a detailed examination of costs and benefits. The method required a detailed cross examination of issues through the use of multi-stakeholder consultation². Recommendations for reform were noted by each group as were instances where the Act appeared to be performing as intended. Given that the case studies were based upon projects implemented over the last five years some of the issues and recommendations made by various stakeholders have already been acted upon by the Agency. These reforms are noted where information was made available by the consultant. In other instances interested readers are encouraged to consult with Agency officials.

Case study findings from the OMP have been aggregated to examine the extent to which the Canadian Environmental Assessment Act is meeting its objectives. Recommendations made in this report are based upon the frequency of particular issues being identified by various stakeholders, as well as on the professional analysis of Hagler Bailly's consultant team.

This report assumes that the reader has a basic understanding of the Act and its requirements. Further information can be obtained at the Canadian Environmental Assessment Agency's (the Agency) web site <http://www.ceaa.gc.ca>³.

² Interested readers are referred to the OMP Methodology Report, November 11, 1998.

³ Table 4.1 in this report contains a comprehensive list of relevant documentation for the Act, its guidelines and operational policy statements.

The following two sections briefly review the:

- Study's context, and the
- Structure of this report.

1.1 Study Context

The Canadian Environmental Assessment Act is one of several regulatory drivers (or legal requirements) of EA in Canada. Proclaimed January 19, 1995 the Act sets out, for the first time in legislation, the responsibilities and procedures for the assessment of federal projects. As such the Act is a planning tool for projects initiated under federal jurisdiction.

1.1.1 *The Act as a planning tool for sustainable development*

The Act has four stated objectives that promote sustainable development:

- To ensure that the environmental effects of projects receive careful consideration before RAs take action;
- To encourage RAs to take actions that promote sustainable development, thereby achieving or maintaining a healthy environment and a healthy economy;
- To ensure that projects to be carried out in Canada or on federal lands do not cause significant adverse environmental effects outside the jurisdictions in which the projects are carried out; and
- To ensure that there be an opportunity for public participation in the EA process.

Its implementation is guided by four general principles:

- (i) **Early application** – EAs should be conducted early in the planning process before irrevocable decisions are made;
- (ii) **Accountability** - self assessment by federal Responsible Authorities (RAs) is a cornerstone of the process. RA, in relation to a project, means a federal authority that is required pursuant to subsection 11(1) of the Act to ensure that an environmental assessment of the project is conducted. RAs include ministers, federal departments/agencies and federal corporations;
- (iii) **Efficiency and cost effectiveness** - Each project should undergo only one EA, and the level of effort required to undertake an EA for the project should match the scale of the project's likely environmental effects; and
- (iv) **Openness and participation** - public participation is an important element of an open and balanced EA process and one that helps achieve sustainable objectives.

The Act has been designed to help ensure that all projects receive an appropriate level of assessment. There are four types of federal assessments; reflecting an increasing scale and complexity of likely project effects. They are screenings, comprehensive studies, mediation and panels⁴.

1.1.2 Development of the OMP methodology and continuous improvement of the Act

Continuous improvement of Canada's regulatory programs is essential to ensure that they operate effectively and efficiently. This ensures regulatory programs achieve their goals while not imposing undue costs. The On-Going Monitoring Program (OMP) is designed to provide information needed to facilitate continuous improvement of the Act.

This project represents the first attempt to develop and apply the OMP method. A case study approach was used to identify the benefits and costs of individual environmental assessments under the Act. The Business Impact Test (BIT) and the Business Impact Cost Accounting Protocol (BICAP) were the main tools used to monitor the impacts of the Act on industry. Perspectives Benefit Analysis (PBA) was used to monitor/evaluate the benefits of the Act. This approach combines case study information with existing benefit literature to develop a plausible benefit scenario. The scenario identifies the likely magnitude of potential benefits and whether it is most likely that benefits are (i) much smaller than the costs, (ii) comparable to the costs, or (iii) much larger than the costs. Some societal benefits resulting from the Act may be relatively immaterial, and can be excluded without adversely affecting the analysis. Others are potentially significant, but cannot be included in the quantification because of lack of data or reliable quantification techniques. In these instances, the societal benefits are identified and characterized by the OMP but not quantified. Screening of case studies, therefore, helps determine which societal benefits identified meet the criteria that make them suitable for quantification.

The result is a method which can be used on an ongoing basis to monitor the impacts of the Act as well as to suggest reforms for improving the Act, its regulations and operational practices (guidelines, administrative procedures, etc.). It does this by providing a steady flow of information on how the regulatory program functions in practice. To be useful, the information must reveal where the current program is functioning well and where there is room for improvement. This information must be verifiable, so that it can be used with confidence in making policy decisions and setting directions for reform. It must attempt to set priorities by providing a rationale framework based upon a balanced assessment of benefits and costs. The OMP methodology has several significant advantages over other approaches. It provides a comprehensive characterization of the Act's impacts in terms of:

- Causal relationships between the Act and observed costs and benefits;
- Significance (materiality) of the costs and benefits; and

⁴ No mediations had been conducted under the new Act at the time of the OMP study.

- Specific elements of the Act, regulations and operational practices that give rise the costs and benefits.

Many of the projects reviewed by the OMP were initiated at or around the time it was enacted. As a result, one would expect to see a lot of inefficiencies as various players learn their roles and responsibilities while applying the Act for the first time. In fact remarkably few cases (15%) were identified where proponents incurred any significant costs without commensurate benefits as a result of triggering the Act. *In fact, almost without exception, all stakeholders felt strongly that the Act provided a range of benefits, whether acting on its own as the primary regulatory driver of EA or in conjunction with provincial requirements.*

Overall, the approach performed quite well. The decision in Phase II to investigate government led assessments also added a degree of difficulty. In cases where most of the EA work was carried out internally there were no systems of time management that could be used to derive EA costs. Finally, some of the projects reviewed had yet to be initiated, others were nearing completion, while only a handful had actually come to completion in terms of construction. This meant cost figures on follow-up activities (costs of mitigation measures, monitoring programs, etc.) were difficult if not impossible to identify.

1.2 Structure of the Final Report

This report is structured as follows:

- Section 2 details the approach taken to developing the final report. It discusses the selection process used for identifying case studies as well as the results of the selection process.
- Section 3 identifies three classes of benefits (process, study and outcome) and presents OMP findings with regard to the distribution of these benefits for all three levels of assessment as well as among various stakeholders.
- Section 4 presents EA costs, incremental costs driven by the Act, as well as project capital costs. Findings are presented for all three levels of assessment. Incremental costs are further broken down into assessment costs, project start-up costs and project implementation costs. While potential impacts to competitiveness are discussed in relation to all three costs special attention is paid to project start-up, where three examples identified by the OMP resulted in significant project start-up costs to proponents.
- Section 5 then focuses on factors affecting the Act's benefits and costs. Issues reviewed include: the recent promulgation of the Act, variations in how the Act and its guidelines are interpreted, limitations / deficiencies of the Act and its guidelines and whether or not the Act is a primary or secondary regulatory driver of EA.
- Section 6 summarizes the document and presents recommendations in relation to major elements of the Act review.

A series of appendices follow that contain one page summaries for each case study developed at the level of:

- Screenings;
- Comprehensive studies; and
- Joint Panels.

Additional appendices contain:

- A benefits matrix of the Act.
- The results of Perspectives Benefits Analysis.

2 Approach

The OMP involved the development of a methodology as well as 20 case studies. The method was tested and refined against three case studies (see Methodology Report, November 11, 1998). Subsequently seventeen additional case studies were developed for the OMP. This report documents the results of all 20 case studies. This section reviews the:

- case study selection process; and
- results (case studies selected).

2.1 Case Study Selection Process for Phase II

In the OMP Methodology Report indicated that it would use a number of criterion to select representative EAs for the development of case studies. Table 2.1 summarizes the results. The first column indicates the selection criteria used. The second column shows preferred weighting of projects based upon statistical information of federal assessments between 1997 and 1998 provided by the OMP committee. The final column indicates the final results. Some minor deviations occurred reflecting the fact that:

- 20 case studies were conducted;
- All panels were included because of their relative importance to development and the EA process in general;
- Some projects were under litigation and could not be reviewed;
- Buy-in was unsuccessful with some proponents/federal RAs;
- Only medium to large scale screening studies were reviewed;⁵ and
- An effort was made to have as comprehensive a sample as possible (case studies were developed for projects conducted under the *Projects Outside of Canada Regulation*, under the Atomic Energy Board of Canada, etc.).

The OMP Committee also indicated a desire to include a number of public sector projects. This also had an impact on the projects selected. As a result the range of proponents interviewed was:

Screenings	Comprehensive Studies	Panels
4 private sector	3 private sector	3 private sector
2 Crown Corporation	----	----
1 federal department	1 federal department	----
----	1 provincial department	1 provincial department
2 development assistance	----	----
1 municipal & private sector	1 federal department & private sector	----

⁵ These represented significant projects, identified by RA's for the OMP study.

Table 2-1: Results of Project Selection

Selection Criteria	Preferred Weighting of Projects	Actual Sampled
EA Categories		
Joint Panel	3	4
Comprehensive Studies	6	6
Screenings	11	10
Triggers		
Proponent	4	1
Money	7	8
Land	2	3
Law	7	8
Transboundary – interprovincial	0	0
Transboundary – effect on federal lands	0	0
Lead Responsible Authorities		
Agriculture and Agri Food	1	1
Atlantic Canada Opportunities Agency	2	1
Canadian Heritage	3	1
Environment Canada	1	1
Fisheries and Oceans	3	4
Indian and Northern Affairs	4	1
Industry Canada	1	0
Transport	1	1
Western Economic Diversification	1	0
Canadian International Development Agency	0	2
National Energy Board	0	3
Public Works	0	1
Department of National Defence	0	1
Canada Newfoundland Offshore Petroleum Board	0	1
Natural Resources Canada	0	1
Atomic Energy Control Board	0	1

An effort was also made to get provincial/regional representation. Numbers indicated in Table 2.2 reflect constraints imposed by the selection criteria discussed above and the availability of projects. Notably absent are case studies from Canada's Far North. These should be addressed if any follow-up work is done.

Table 2-2: Provincial/Regional Representation of Projects Selected

Provincial/Regional Representation					
Newfoundland	1	Ontario	6	Alberta	3
Maritimes	2	Manitoba	1	British Columbia	2
Quebec	1	Saskatchewan	2	International	2

Finally, Table 2.3 shows the types of projects reviewed as a result of applying the selection criteria.

Table 2-3: Project Type Selected by the OMP

Sector & Project Type	Number	Sector & Project Type	Number
<i>Linear Developments</i>	5	<i>Resource Exploitation</i>	5
1. Pipelines	3	1. Mines	3
▪ CO ₂ = 1		▪ Potash = 1	
▪ Water = 1		▪ Copper = 1	
▪ Oil = 1		▪ Gold = 1	
2. Transmission Lines	1	2. Offshore Drilling	2
3. Seasonal Road	1	▪ Oil = 1	
		▪ Gas = 1	
<i>Capital Works</i>	3	<i>Decommissioning</i>	2
1. Building Construction	1	1. Military Base	1
2. Food Park Development	1	2. Uranium Mine	1
3. Waste Treatment	1		
<i>Natural Resource Management</i>	5		
1. Flood embankment	1		
2. Watershed management	1		
3. Remedial Action Plan	1		
4. Tree removal	1		
5. Golf Course Re-Surfacing	1		

2.2 Results - Case Studies Selected

Table 2.4 provides a summary of the case studies selected for the OMP study. Full descriptions of each case study are found in Appendices 1, 2, and 3 for screenings, comprehensive studies and joint panels respectively. Case study numbers are used for quick reference throughout the rest of the report. Where readers wish to obtain further information they are directed to the relevant case study write-up in the Appendices.

Table 2-4: Case Studies Selected by the OMP in Phase I & II

#	Project	EA Type	Trigger	R.A.	Sector	Project Type	Province	Proponent Type	Completion Date
1	Building	Screening	Land	Public Works	Capital Works	Construction of Building	Quebec	Crown Corporation	December 1995
2	Tree Clearing	Screening	Money	Transport Canada	Natural Resources Management	Tree trimming on airport runway approach	Ontario	Federal RA	October, 1997
3	Golf Course	Screening	Law	Parks (Canadian Heritage)	Natural Resources Management	Golf course re-surfacing	Alberta	Private Sector	NA
4	Food Park	Screening	Money	Atlantic Canada Opportunities Agency	Capital Works	Construction of Building	Prince Edward Island	Provincial Crown Corporation	October, 1995
5	CO ₂ Pipeline	Screening	Money	NEB	Linear Development	High pressure CO ₂ Pipeline	Saskatchewan	Private Sector	October, 1995
6	Water Pipeline	Screening	Money (POC)	Industry	Linear Development	Water Pipeline	Uganda	Non-Government Organization	June, 1998
7	Transmission Line	Screening	Land	DIAND	Linear Development	Transmission Line	Ontario	Private Sector	February, 1999
8	Flood Embankment	Screening	Money (POC)	CIDA/DFAIT	Capital Works	Waste Water Treatment	Bangladesh	Executing Agency	March, 1998
9	Waste Water Treatment	Screening	Money	AAFC	Capital Works	Wastewater treatment plant upgrade	Manitoba	Private Sector	December, 1996
10	Phosphate Mine	Screening	Law	DFO	Resource Exploitation	Open pit phosphate mine	Ontario	Private Sector	January, 1999

#	Project	EA Type (FEAI Ref #)	Trigger	R.A.	Sector	Project Type	Province	Proponent Type	Completion Date
11	Copper Mine	Comprehensive Study	Law List	NRCan	Resource Exploitation	Copper mine	British Columbia	Private Sector	March, 1996
12	Mine Decommissioning	Comprehensive Study	Law List	AECB	Decommissioning	Uranium Mine Decommissioning	Ontario	Private Sector	August, 1997
13	Wood Preservers	Comprehensive Study	Money	Env. Canada Ontario Reg.	Capital Works	Treatment facility for hazardous waste	Ontario	Federal RA	March, 1997
14	Base Decommissioning	Comprehensive Study	Proponent	DND	Decommissioning	Base decommissioning	British Columbia	Federal RA	December, 1997
15	Seasonal Road	Comprehensive Study	Money	DFO, Coast Guard (lead RA) INAC is an RA	Linear Development	Road construction	Saskatchewan	Provincial RA	December, 1996
16	Gold Mine	Comprehensive Study	Law list	DFO	Resource Exploitation	Gold mine development	Ontario	Private Sector	March, 1996
17	Water Diversion	Joint Panel	Law list	Coast Guard, DFO	Natural Resource Management	Water conservation / irrigation project	Edmonton	Provincial RA	June, 1998
18	Offshore drilling and Natural Gas Pipeline	Joint panel	Law List	NEB	Resource Exploitation	Offshore drilling and pipeline	Nova Scotia, New Brunswick	Private Sector	October, 1987
19	Oil Pipeline	Joint Panel	Law list	NEB	Linear Developments	Construction and operation of pipeline	Alberta	Private Sector	June, 1995
20	Offshore Oil	Panel	Land	CNOBP, (lead) DFO, DOE	Resource Exploitation	Offshore petroleum development	Newfoundland	Private Sector	August, 1997

3 Societal Benefits Driven By EA In OMP Case Studies

The Act's principle objective is to promote sustainable development. To this end, the Act contributes a number of *societal benefits* identified by the OMP. This chapter focuses on identifying those benefits as well as sections of the Act that drive them.

Measures of these benefits were obtained using two different approaches.

- (i) EAs help proponents to avoid/mitigate adverse project impacts. Avoided costs are, therefore, one type of EA benefit. Since EA's do not tend to generate quantifiable information on avoided costs the OMP identified instances where *mismanagement* of the Act resulted in direct costs to the proponent. These costs were then used as a proxy the value of benefits foregone if the Act had been properly followed. Cost figures were developed through interviews by identifying the section of the Act/regulation or guidelines mismanaged, the resulting fees or time spent to deal with the problem, and finally by assigning dollar values to the total costs.
- (ii) A second approach, called perspective benefits analysis, places a direct value on (i) the risks managed through mitigation or (ii) the ecosystem components preserved. Perspectives benefits analysis incorporates some of the steps of traditional approaches to environmental valuation, but not the quantification techniques. Instead, the methodology combines case study information with information from the existing literature on environmental/health and other societal benefits to provide a perspective of whether the magnitude of benefits attributable to the Act is likely small, commensurate or large relative to its costs. Benefits were screened to identify which were suitable for quantification. Screening involved determining whether or not:
 - EA produced incremental benefits likely to be associated with other EAs under the Act (i.e. are the benefits representative);
 - the benefit was of material significance;
 - there was sufficient data to quantify or monetize the benefit?

Results of both approaches are documented in this chapter.

The sections that follow:

- define three classes of societal benefits resulting from the Act and discuss sections of the Act driving their realization;
- discuss the distribution of these benefits among various stakeholders;
- present the results of perspective benefit analysis; as well as
- a summary of the findings.

3.1 Societal Benefits & Sections of the Act Driving Their Realization

One of the stated objectives of the Act is that encourages RA's to take actions that promote sustainable development. The OMP identified three classes of *societal benefits* associated with the Act. They are:

- process benefits,
- study benefits, and
- outcome benefits.

Each is driven by specific provisions of the Act and is explained further in the sections that follow.

3.1.1 Process Benefits

Process benefits are realized where the Act provides an effective/efficient framework for integrating environmental considerations with project planning. One of the main principles of the Act is that the EA process should be efficient and cost effective. That is each project should undergo only one EA, and the level of effort required to undertake an EA for the project should match the scale and complexity of the project's likely environmental effects. Results of the OMP study indicate that stakeholders interviewed felt that the Act played a significant role in realizing process benefits. Instrumental were sections of the Act and its guidelines related to exclusion, timing, harmonization, single assessments for linked projects and the delegation of EA responsibilities.

Section 7(1) and Exclusion List Regulations allow certain types of projects to forgo the assessment process saving RAs/proponents time and money

Section 7(1) provides for the development of an exclusion list that identifies projects not required to carry out assessments under the Act. It also recognizes the necessity of implementing certain projects in response (a) to national emergencies, (b) to prevent property/environmental damage, or (c) in the interest of public health and safety. Benefits here are primarily to proponents and regulators from cost savings of not having to develop an assessment. Since projects excluded from the Act were not reviewed by the OMP, only one study can be used as a proximal measure for this process benefit.

- *Case Study 2 (Tree Clearing):* In carrying out an assessment the RA/proponent potentially compromised the safety objectives of the Airport Zoning Regulation. In the absence of an assessment the trees would have still been cut down and proponents would have had to mitigate many of the environmental effects themselves. Additional RA costs imposed by the Act resulted in capital expenditures which increased the costs of project implementation by almost 60% (\$250,571).

Section 11(1) helps to ensure that EAs are carried out as early as possible before irrevocable decisions are made.

The Section 11(1) of the Act requires that assessments be carried out as early as possible before irrevocable decisions are made. This allows proponents to consider feasible project *alternatives* prior to the detailed design stage. Early consideration of alternatives also allows proponents to document their rationale for the final project design and screen it with members of the public and various regulatory authorities prior to focusing on detailed project designs. This reduces planning costs, avoids project start-up delays and helps to manage unnecessary public controversy. In 85 % of the case studies developed EA timing was not identified as a problem, indicating that the Act is performing as it should.

In three other case studies, however, the late implementation of EAs resulted in a number of significant project start-up costs:

- *Case Study 1 (Building)*: If the RA had initiated an EA earlier in the decision making process, the need to consider site alternatives might have been addressed. While this might have increased the cost of the EA, it also might have helped to avoid the public controversy that ensued over site selection, the resulting requests for additional information and delays in project implementation. Implied benefits of better timing include avoiding construction delay costs of approximately \$1.7 million (equivalent to 5.6% of the projects capital costs).
- *Case Study 12 (Mining Decommissioning)*: In this case, the proponent had known about both the requirement for an EA as well as the timing of decommissioning well in advance of the decision to implement assessment activities. Rather than waiting for mining activities to stop, a number of baseline studies and decommissioning plans could have been started. Instead there was a period during the review and approval period where the proponent identified site maintenance/carry costs of almost \$100,000 (or 0.2% of capital costs). In our opinion these might have been avoided if the assessment activities had been initiated earlier.
- *Case Study 19 (Oil Pipeline)*: Panel members in this study complained of the short time lines available to review and approve the proponent's EA. In our opinion this compromised the quality of the Panel review document which put the credibility of the assessment process at risk.

(i) Same Assessment For Related Projects – Section 15(2): Process Benefit

Linking projects under the same review process potentially results in cost savings for proponents as well as for federal authorities. In theory, proponents realize savings where the cost of investigating impacts and developing mitigation measures are shared (i.e. where there are cumulative effects)⁶. The potential for linked projects was identified in case studies 5 and 10. In both instances, a decision was made to conduct separate EA's. Since cumulative effects were unlikely in both instances, cost savings could not have

⁶ Inherent risks are discussed in section 5.3.4

been realized by the proponents in these two projects. In fact linking the projects might have unnecessarily put construction schedules at risk.

Linking projects for RA's provides a single forum for review, and allows cost sharing arrangements with regard to the establishment of public registries, participant funding, etc. Since the OMP focussed on proponent costs there is no quantification of these savings. However, on several occasions federal and/or provincial authorities interviewed by the OMP noted these efficiencies.

Harmonization of federal and provincial EA requirements results in significant cost savings to proponents by reducing reporting requirements and providing a single forum for review and approval

Section 12(4), 40(1) and 54(1)(b) of the Act help to ensure that proponents are subject to only one EA process through harmonization. Harmonization of federal and provincial requirements for assessment result in significant cost savings to proponents by reducing reporting requirements and providing a single forum for review and approval. This helps proponents manage a great deal of uncertainty. Forty percent (40%) of the projects reviewed by the OMP involved situations where federal and provincial EA processes were harmonized (1 screening, 2 comprehensive studies and 4 panels). The majority of these were successful. Two case studies illustrate avoided benefits of harmonization:

- *Case Study 11 (Copper Mine):* In this project, the proponent was well into the provincial EA process before scoping for federal requirements took place. The Act played a significant role in improving the scope of the provincial assessment by requiring the proponent to examine cumulative effects, emergency response plans, and develop follow-up plans. While there is no doubt in any of the stakeholders minds that the resulting assessment was stronger, delays due to lack of harmonization resulted in lost profits and increased project implementation costs amounting to approximately \$21 million (15% of project capital costs).
- *Case Study 20 (Offshore Oil):* This study occurred prior to the development of many harmonization agreements or developments of MOU's between various regulators. As a result harmonization issues contributed to delays in panel start-up. Proponents estimated that the seven month delay resulted in lost revenue of approximately \$14 million or 0.7 % of capital costs. In our opinion separate federal and provincial reporting requirements might have led to much larger losses of revenue.

In other words the implied benefits of harmonization are significant efficiencies realized in the time and costs required during planning for regulatory approval, as well as the risk of avoiding inconsistent conditions placed upon approvals.

- *Case Study 15 (Seasonal Road):* Provincial authorities interviewed here identified additional benefits to RAs from harmonization through cost sharing arrangements for public registries, participant funding, public meetings, the cost of the review, etc. with provincial authorities.

Project start-up delays were minimized where RAs participated in EA scoping and preparation.

Section 17(1) allows the RA to delegate responsibilities related to preparing the assessment. OMP results indicate that proponents did not incur project start-up costs when RA's took a proactive role in coordinating federal and provincial inputs during project scoping, report preparation and during EA review. Continual input and refinement of the project's scope avoided requests for additional information during the review period. Resulting benefits are clearly demonstrated in case studies 4, 7, 12, and 13 where incremental costs are low; ranging from 0.1% to 1.1% of total capital costs. In fact, the Act drove process benefits in virtually all but three of the case studies reviewed by the OMP. In these three instances the mismanagement of the Act resulted in a number of avoided process benefits:

- *Case Study 1 (Building):* Late triggering of the Act and lack of consultation between the Proponent and the RA resulted in re-scoping of the assessment led to significant project start-up costs for the proponent (\$1.7 million or 5.6% of total capital costs).
- *Case Study 11 (Copper Mine):* Similarly late triggering of the Act resulted in re-scoping of the assessment to meet the Act's needs. Resulting delays cost the proponent approximately \$20 million - or 15.0% of total capital.
- *Case Study 12 (Mining Decommissioning):* In this study, while the RA participated in scoping it did not provide any input during development of the assessment. As a result there was a 3 month delay during the review and approval period while design features of proposed mitigation measure were finalized. Delays cost the proponent approximately \$100,000 in site maintenance costs.

Public registries, required by Section 55(2) of the Act, ensure public participation and facilitate EA review

Section 55(2) of the Act ensures that a public registry is established to facilitate EA review. This improves access to project/EA information and played an important role in every project reviewed by the OMP.

- *Case Study 17 (Water Diversion):* Provincial authorities noted that the community-based registry established by the Agency was the only one used during the review. Improving the public's access to information is probably the key benefit from this section of the Act.

- *Case Study 9 (Flood Embankment)*: The RA's EA Adviser noted that the requirement for a public registry improves the access for Canadians wanting to know more about the types of development projects being implemented overseas.

3.1.2 Study Benefits

Study benefits lead to improvements in assessment quality and/or a reduction in assessment costs. Most stakeholders interviewed by the OMP indicated they felt that the Act's guidelines and operational policy statements helped to ensure EA quality for all three levels of assessment.⁷ In fact proponents, RA's and/or public interest groups interviewed in case studies 4 (Food Park) and 11 (Seasonal Road) observed that the Act had set the standards to which some provincial processes were evolving. Relevant sections of the Act driving study benefits include scoping, significance, alternatives, using previously conducted EA's, follow-up and participant funding. These concepts are explained in guidelines and operational policy statements that often, do not have an equivalent at the provincial level. The majority of the stakeholders interviewed felt that these documents helped set standards and expectations for all parties involved.

Scoping requirements focus the EA and provide a common terms of reference for the RA and proponent.

Scoping requirements are detailed in Sections 15(1) and 16(3) of the Act. Accordingly the RA or the panel are required to define the parameters of the assessment (elements of the project included, types of effects to be studied, etc.). Where this is done cooperatively with the proponent, it provides common terms of reference and, therefore, a greater degree of certainty for both parties as to what the assessment will cover. This limits the potential for additional requests for information later in the assessment process which can lead to project delays and significant costs. For this reason realization of this study benefit is closely linked with how the RA chooses to delegate responsibilities during the assessment (see discussion in previous section). While the vast majority of stakeholders interviewed during the OMP did not comment on scoping as an issue, two case studies were identified where scoping worked particularly well.

- *Case Study 3 (Golf Course)*: the RA worked closely with the proponent and their consultant at scoping and throughout the assessment process to continually refine the mercury issues being investigated. There were no delays associated with review and approval since all parties had worked together throughout the assessment process to identify issues and focus on the most appropriate mitigation measures.

⁷ Note: the OMP focused on incremental rather than shared benefits. As a result the role of the guidelines was not captured in cases where provincial requirements overlapped with the Act.

- *Case Study 4 (Food Park)*: a committee was formed on this project of federal and provincial regulators which worked together with the proponent's consultant at scoping and provide direction throughout the assessment processes where needed.

In both instances, RA's maintained an ongoing relationship with the proponent to continually scope the assessment as it evolved.

In contrast, benefits were minimized in three case studies developed by the OMP where the RA was either (a) absent during scoping; (b) present during scoping but not an active participant during the assessment's preparation or (c) did not use all existing information at its disposal to assist in scoping:

- *Case Study 1 (Building)*: The proponent initially undertook an EA of the site voluntarily, prior to the promulgation of the Act. Once it became apparent that the RA had responsibilities under the new Act, the proponent was asked to revise the EA, carry out public consultation and address a number of requests for additional information. Project delays and resulting cost (\$1.7 million) reflect the importance of having both the RA and proponent present for scoping.
- *Case Study 12 (Mining Decommissioning)*: While the RA was present for scoping, lack of departmental resources was quoted as being partially responsible for the lack of support during EA preparation. As a result, proposed mitigation measures were refined over a 3 month period during review and approval. During this period the proponent took on incremental site carrying costs of almost \$100,000 dollars.
- *Case Study 14 (Site Decommissioning)*: Here the RA's consultant did not use information made available by another federal authority to assist in project scoping. As a result there were a number of delays during review and approval. Since this was a public sector EA there were no costs associated with lost revenue.

Case studies where guidelines and operational policy statements were not available to illustrate their importance:

- *Case Study 11 (Copper Mine)*: According to the RA, the absence of guidelines for cumulative effects and significance helped to contribute to significant costs (\$1.6 million or 5.6% of project capital costs) incurred as a result of uncertainty during the assessment period and resulting project delays.
- *Case Study 19 (Oil Pipeline)*: As one of the first pipeline studies conducted after the Act's promulgation, the assessment was done without the benefit of many of the guidelines and operational policy statements now available. These documents might have helped avoid the dissension of a panel member based upon a different interpretation of the Act. The basis of this dissension was further pursued in court, costing the proponent approximately \$2.5 million in legal fees.

Finally the Act helps reduce study costs by allowing proponents to draw upon previously conducted EA's, thereby reducing assessment costs. Cost savings identified by the OMP include \$1.0 million (or 100% of the present EA costs) for Case Study 12 and approximately \$10 million (or 30% of for Case Study 20)⁸.

(ii) Significance - Section 16(1)(b): Study & Outcome Benefits

While many provincial EA processes require proponents to identify project impacts they do not all require a determination of significance. This focuses the EA on impacts deemed significant so that mitigation measures can be targeted where they are most needed. The result is that both the proponent as well as federal/provincial authorities are able to channel their resources where they are most needed. In at least 95% of the projects reviewed significance appears to have been handled well. One case study was identified where significance may not have been handled appropriately by the RA:

- *Golf Course (Case Study 3):* In this instance, mercury levels had been monitored on the golf course for a number of years prior to initiating the EA. Thus the nature of the "problem" was known at EA start-up. Additional research required by the RA did not indicate that mercury posed a significant threat to human health or to the environment. Since the assessment did not (in our opinion) identify mitigation measures that reduced any risk or improve hazard management, potential benefits from the assessment process may not have been fully realized. For instance if risk from exposure were not deemed significant, the project might have been able to proceed as originally conceived; thereby avoiding additional capital costs of nearly half a million dollars or 15% of total project capital costs.

(iii) Use of Previously Conducted EA's - Section 24: Study Benefit

This practice allows proponents to use and adjust previously conducted assessments for projects that have already undergone an EA but were not implemented. The OMP identified two case studies where previous panel studies generated assessment benefits:

- *Case Study 20 (Offshore Oil):* here not only was project scoping greatly facilitated by a previous panel study, but the proponent was able to use and update much of the environmental effects data generated by this study – saving an estimated \$10.0 million in baseline study costs. This would have added 30% again to existing EA costs.
- *Case Study 12 (Mining Decommissioning):* As a result of a previous panel conducted in the same watershed area, the decommissioning was not bumped up to a panel hearing and cost savings for related baseline studies and public consultation approximated \$1.0 million. In other words the cost of the EA would have doubled.

⁸ Class EA's were not examined by the OMP, but they also represent another initiative by the Agency to streamline study costs by capturing known impacts and standard mitigation measures for various classes of projects.

3.1.3 Outcome Benefits

- (i) *Outcome benefits* are the environmental impacts avoided in the assessment or mitigated during project implementation. Results of the OMP study indicate that the Act is the primary driver of these benefits where it is the only regulatory driver of EA. The requirement for follow-up activities (section 38 of the Act) is particularly important for the realization of outcome benefits. Since there is no mechanism to enforce follow-up at the provincial role, this section of the Act is currently the only means of ensuring compliance with EA approval conditions. Outcome benefits were identified in 8 out of 10 screenings and 2 out of 6 comprehensive studies examined. Multiple, overlapping EA requirements and regulatory conditions for joint panels studies precluded the Act playing any incremental role. Outcome benefits have three forms:
- *Avoidance benefits:* Avoiding impacts through the consideration of alternatives is one of the least expensive and most effective ways of ensuring sustainability. This benefit is realized at the time of project planning and is driven by sections of the Act that require the examination of alternatives. Cost savings to proponents include avoided mitigation measures, lower risk, fewer regulatory permits required, etc. Generally avoidance was observed in linear projects such as pipelines (Case Study 5, 18 and 19), roads (Case Study 15) and transmission lines (Case Study 7). Consideration of alternatives is only a requirement at the comprehensive study level and above. In most case studies alternatives would have either been captured by "best practice" policies of industry or by provincial EA requirements. Less obvious, however, are alternatives in non-linear projects.
 - *Case Study 12 (Mining Decommissioning):* the proponent was asked to develop alternative scenarios for the tailings dam. This requirement was driven solely by the Act.

In the case studies developed under the OMP, the Act consistently contributed to this class of benefits through its guidelines and operational policy statements. These provided proponents and RA's with direction on how to investigate, report on and evaluate alternatives. A broader sample of case studies may, in fact, reveal instances where the Act contributes directly to avoidance benefits.

- *Mitigation benefits:* Mitigation measures reduce or eliminate significant impacts identified by the assessment. They are identified during project planning and realized during project implementation. Not only does the Act require the identification of mitigation measures, but it also ensures their implementation by making them the RA's responsibility. Table 3.1 summarizes mitigation benefits identified by the OMP. Surprisingly, these benefits were identified in only 3 screenings (Case Study 1, 2 and 3) and 3 comprehensive studies (case studies 12, 14 and 16). This is less than what was initially expected, since it was assumed that if the Act:

- was the only regulatory driver of EA it would also be the primary determinant of mitigation measures identified;
- had different requirements from other EA legislation that this would result in distinguishable mitigation measures.

In fact incrementality was difficult to establish since many of the mitigation measures identified by the OMP would have been required by enforceable regulations, such as the Fisheries Act, or by other EA jurisdictions. What may be more important is the role the Act plays in setting the planning context that leads to the identification of mitigation measures as well as the requirement for follow-up activities which ensures their implementation. A number of stakeholders interviewed commented on the role the Act played in affecting the culture of project planning and EA in Canada.

- *Risk/Hazard management benefits:* are realized through monitoring, design modifications and/or emergency response plans for potential disasters (such as earthquakes, floods, contamination, etc.). They are required for all assessments done under the Act under Section 16 (1)(a), but also by a number of RA's (NEB, AECB, DND, etc.) interviewed. As a result, the OMP identified these benefits in 75% of the case studies examined (7 out of 10 screenings, 4 out of 6 comprehensive studies, and in all 4 panel reports). Of these studies the Act was found to play a clear incremental role in three:
 - *Case Study 1 (Building):* the proponent developed a monitoring program to ensure that mitigation measures for the adjacent wetland area were effective.
 - *Case Study 3 (Golf Course):* again monitoring programs and mitigation measures were established to manage the potential exposure to mercury identified on site.
 - *Case Study 8 (Waste Water Treatment):* driven studies found that a major malfunction might cause ammonia discharges resulting in acute lethality near the outfall and exceedance of provincial surface water quality objectives for up to 130 km downstream under assumed flow conditions. Although the risk of a major malfunction was considered to be remote, a formal contingency plan was established.

While the Act was the only regulatory driver of assessment in case studies 4, 7, 10 and 14, other regulations would have resulted in the development of environmental management systems to minimize risk and/or hazards identified.

Table 3-1: Incremental Mitigation Benefits Associated with the Act

Screening	Driven Outcome Benefits	Incrementality
Building	- Wetlands preservation; - Monitoring program.	The Act identified wetlands area, the new <i>Federal Wetlands Policy</i>, and the need to mitigate project impacts.
Tree Clearing	- Restoration of natural habitat; - Minimized destruction of existing habitat through specialized tree clearing techniques; and - Continued operation of golf course.	The Act identified mitigation measure for replacing non-indigenous coniferous stands with habitat enhancing vegetation.
Golf Course Resurfacing	Hazard management of existing mercury problem.	The Act provided forum for RA and proponent to identify and implement hazard management program.
Transmission Line	- Bird flight mitigation measures; - Community consultation.	
Comprehensive Studies	Driven Outcome Benefits	Incrementality
Copper Mine	- Emergency response plans; - Environmental monitoring program; - Follow-up assessment of the proponent's performance during project implementation.	All required by the Act rather than the provincial process.
Base Decommissioning	- Monitoring programs during follow-up; - Mitigation measures to protect spring source.	Driven by review and requirements for follow-up.
Seasonal Road	Follow-up measures resulting project modifications during construction to deal with route deviations and poorly implemented mitigation measures.	Follow-up program required the presence of an environmental monitor on site.

3.2 Sections of the Act Driving Societal Benefits

- Various sections of the Act drive the societal benefits discussed in the previous section. These are discussed below.

(i) ***Identifying & Implementing Mitigation Measures – Section 16 (1)(d), 16(2)(c) and 20(2): Process & Outcome Benefits***

Proponents obtain regulatory approval from various federal/provincial regulatory authorities where mitigation measures are identified to reduce impacts to the point where they are no longer deemed significant. Society, in turn, benefits from more sustainable forms of development. Key to ensuring the implementation of mitigation measures are sections 16(2) requiring follow-up and Section 20(2) of the Act which states that the implementation of mitigation measures identified in the EA are ultimately the RA's responsibility. The result is twofold. The first is that environmental auditors were shown by the OMP to be an essential component of follow-up, ensuring the EA becomes a guide for project implementation rather than a document that is shelved:

- *Case Study 15 (Seasonal Road)*: the environmental auditor identified several instances where the proponent had deviated from the EA during construction. Ameliorative actions resulted in significant costs to the proponent of over \$1.0 million. These costs are in fact the societal benefits from follow-up activities.

The second benefit is that the RA becomes a single point of contact for all stakeholders involved/interested in follow-up activities:

- *Case Study 11 (Copper Mine)*: The Sierra Club used this section of the Act to prompt the RA in this project to develop a follow-up report synthesizing results of mitigation from the monitoring efforts of various federal and provincial regulators.

OMP results indicate that the Act is a primary driver of mitigation benefits where environmental regulations/policies are not enforceable and/or where there are no other requirements for assessment. This happened most often at the level of screenings and comprehensive studies. Where the Act shares responsibilities for determining mitigation measures with other regulations, the Act's guidelines and operational policy statements may play an important qualitative role.

(ii) ***Follow-up - Section 38: Study and Outcome Benefit***

The Act requires that proponents design and implement a follow-up program in accordance with any regulations made for that purpose. It also requires that the public be notified of these activities. The OMP identified three case studies where follow-up activities had been completed:

- *Case Study 3 (Golf Course)*: results of the follow-up indicated that all proposed mitigation activities had been carried out.

- *Case Study 11 (Copper Mine)*: a draft report of follow-up activities had been developed by the lead RA. No major deviations from proposed activities were reported.
- *Case Study 15 (Seasonal Road)*: Environmental monitoring activities required as a result of follow-up indicated that not enough riffraff was placed on the culverts (increasing the potential risk of erosion), culverts installed were too high (increasing the risk of flooding) and the contractor had made an unplanned stream and lake crossing. The latter were the most serious deviation from the EA, requiring removal, clean-up and construction activities amounting to \$1.0 million.

(iii) Participant funding – Section 58 (1.1): Study Benefit

While various stakeholders disagree on how participant funding is allocated (section 5.2.7 of this report) all would concur that this section of the Act plays an important role in the review. A number of NGO groups interviewed (Case Studies 17 and 19) stated that without this type of support participation and legal representation would not have been possible. Since the OMP focussed on proponent costs, figures are not available for this benefit.

3.3 Distribution of Societal EA Benefits Among Stakeholders

Figure 3.1 indicates the distribution of process, study and outcome benefits among proponents, responsible authorities and the public. Further details are provided in Appendix 5. As one would expect results show a shift from process to study to outcome benefits as the process proceeds. There is also a shift from the proponent and RA to society.

Figure 3-2: Distribution of Societal EA Benefits Among Stakeholders

EA Stage	Proponent	Responsible Authority	Society
EA Start-Up			
Harmonization			
Exclusions			
Timing of assessment			
Scoping			
Delegation of Responsibilities			
EA Report Preparation			
Environmental effects			
Significance			
Public comments			
Mitigation			
Alternatives			
Follow-up plan			
Use of previous assessments ⁹			
EA Review & Approval			
Adequacy of information			
Decision			
Follow-up			
Environmental monitor			
Verifying effectiveness of predictions			
Enforcement			

Key

	Process Benefit
	Study Benefit
	Outcome Benefit

EA Start-up Focuses on Process Efficiencies for the Proponent & RA

During EA start-up OMP results indicate that the proponent and the RA realize process and study benefits from activities such as scoping, harmonization, etc. Usually the public is not involved at this stage of decision making.

EA Report Preparation Focuses on Study & Outcome Benefits for the Proponent, RA & Public

During EA report preparation, the proponent is able to demonstrate due diligence and obtain regulatory approvals, increase public confidence in the undertaking and demonstrate due

⁹ Section 24 (1) of the Act.

diligence. Case Study 9 showed that confidence for investing in projects increased as a result of the Act. According to the RA, international finance corporations see this step in planning as an important part of demonstrating due diligence. The development of follow-up plans also can provide a greater degree of certainty for proponents during project implementation. At this stage RA's are able to ensure that they are upholding their respective regulatory mandates while meeting broad government objectives for sustainability. The public also benefits in several distinct ways. EA's often add to the general body of knowledge through scientific/socio-economic studies. Consultation allows the public to voice their concerns and participate in the development process. Finally, and most importantly avoidance, mitigation and hazard management reduce the impact of development for the common good.

Review & Approval Focuses on Process or Study Benefits for all Stakeholders

Many proponents interviewed stated that the review and approval stage represents a collective agreement with RA and other authorities over the conditions for project approval. This provides the proponent with greater certainty for project implementation. RA's have an opportunity to review the EA and request additional information where gaps are identified. Where the public is involved they are able to ensure that the EA has captured and addressed their concerns.

Follow-up Focuses on Outcome Benefits for the Public.

Finally, follow-up activities provide the RA with an opportunity to ensure that its obligations under the Act and other relevant legislation are met. The public primarily benefits from these activities since they ensure the realization of mitigation measures. Proponents can also benefit from follow-up where it is used to verify the effectiveness of predictions. Not only does this add certainty to the conditions of permitting, but it also provides the basis for class EA's which further reduce the costs of assessment. Follow-up activities are identified during project planning. Ideally they result in the identification of roles and responsibilities as well as reporting requirements. They are implemented during construction, operation and decommissioning stages where appropriate.

3.4 Results of Perspectives Benefits Analysis

Estimates of the incremental benefits attributable to the Act were developed using the Perspective Benefits Analysis (PBA) in a series of case studies. A full discussion of PBA is contained in Appendix 5 with the detailed findings of the five case studies reviewed. What follows are general findings of the analysis conducted.

In several cases, the incremental impacts attributed to the Act resulted in limited and often poorly characterized environmental and social impact benefits. In other cases, the incremental impacts that were identified and attributed to the Act were better defined. From the entire group of case studies, several conclusions emerged based on the benefits scenarios that were developed and evaluated using the PBA and from a consideration of the potential process benefits.

First, we concluded that the related incremental benefits were generally commensurate with the costs associated with conducting the environmental assessment. This conclusion was supported through the development of the following benefits scenarios (see the case study write-ups for specific assumptions and economic values used):

- Offshore Oil – prevention of future oil spills and avoided injuries to the Grand Banks fishery.
- Site Decommissioning – protection of existing groundwater resources being utilized by the local population.
- Golf Course – benefits of reduced mercury exposure and avoided hazardous waste disposal costs.

Second, we concluded that the observed process benefits were likely to be as large as the project benefits related to avoided adverse outcomes. Examples of the categories of process benefit categories that were observed in the case studies include the following:

- *Increased community involvement and peace of mind.* The Act assessments provide a means for identifying, expressing, and incorporating community concerns in the planning stages of a project. While these benefits are difficult to quantify, they appear likely to be at least comparable to the costs of providing the opportunity.
- *Increased public knowledge.* The Act assessments often required background surveys, and ongoing or follow-up monitoring. This information may provide a better understanding of the natural systems by defining conditions at a point in time and then observing and recording changes over time. As a result, this information may allow for more informed future resource use, allocation, and protection decisions.
- *Information exchange.* In some cases, the Act assessments required project modifications that resulted in a new or improved project implementation or mitigation methods (see the golf course case study). The Act assessments also identified concerns with prior assessment techniques. By making this information publicly available, future project proponents stand to benefit.
- *Consistency in environmental assessments.* With their broad scope, the Act assessments can effectively create minimum project acceptability standards by defining the issues a similar project must address and establishing acceptable implementation and mitigation measures. These project acceptability standards increase project proponents' certainty about their likely obligations and inform the general public about what will be involved in similar projects.

An example of the potential magnitude of these process benefits can be seen in the Offshore Oil (Case Study 20) where the project proponents were allowed to incorporate the results from baseline studies conducted as part of a previous EA. This sharing of accumulated knowledge helped the proponents avoid costs of approximately \$10 million for conducting additional baseline studies. These avoided costs were well within the range of benefits estimated for avoiding a future oil spill and potentially impacting the Grand Banks fishery resources.

Additional examples of these process benefits are presented in the Site Decommissioning (Case Study 12), where minimum acceptability standards for defining baseline conditions at a potentially contaminated site are clearly being defined, and at the Golf Course site, where the

final project implementation method has the potential to be transferred to other sites. In the Golf Course example these potential process benefits are clearly the major source of benefits, as no direct benefits could be specified with any detail.

These conclusions provide strong support for the Act, especially when considering that range of other benefits were excluded from analysis. These benefits include:

- Shared benefits where the Act acts in conjunction with other regulations; and
- Projects excluded from the EA process through the Act's regulations (Comprehensive Study, Exclusion list, etc.) and the proper use of triggers.

3.5 Societal Benefits Summary

The OMP identified and classified a range of societal benefits driven by the Act. Essentially the Act:

- helps various stakeholders realize *efficiencies* while coordinating assessment/regulatory requirements during planning (through process benefits);
- improves the *quality* of the assessment through guidelines and operational policy statements (study benefits); and
- realizes sustainable development benefits through the promotion of avoidance/mitigation measures which minimize or eliminate adverse impacts associated with project implementation (outcome benefits).

In the absence of any other regulatory requirements for EA, the Act drives all three classes of benefits. These are discussed below:

- (i) *Process benefits* help proponents avoid delays at project start-up. This is the area of highest risk for the private sector and the one which OMP interviewees expressed the most concern. The Act helps to manage these risks by reducing the time for assessment by requiring the harmonization of EA processes (seen in over 50% of OMP studies) and through project scoping. Preliminary results suggest that the implied benefits of these requirements can be as high as 15% of project capital costs or approximately \$21 million in absolute terms for one of the case studies developed.
- (ii) *Assessment benefits*: Without exception all stakeholders interviewed stated that the Act guidelines played an important role in assuring the quality of assessments produced. A number of federal and provincial authorities saw the Act as a major driver of EA reform at the provincial level. Quality improvements increased the public's confidence in the process, thereby reducing the number of court challenges associated with decisions. They also reduced the time required by proponents to respond to additional requests for information during review and approval. OMP identified related savings as high as 5.6% of project capital costs.

- (iii) *Outcome benefits* are the environmental impacts avoided or managed through the assessment process. They also include the environmental management systems put in place that monitor for unknown impacts and track the effectiveness of mitigation measures established. The OMP demonstrated that the Act was a major driver of these benefits where it was the only regulatory driver of EA (i.e. screenings and some comprehensive studies). Parts of the Act driving these benefits include the requirement for alternatives, mitigation measures and follow-up. The range of outcome benefits identified has been summarized in Table 3.1

Perspective benefits analysis helped to demonstrate that outcome benefits were generally commensurate with/or higher than the costs associated with conducting the environmental assessment. This conclusion was supported through the development of the following benefits scenarios:

- Offshore Oil – prevention of future oil spills and avoided injuries to the Grand Banks fishery.
- Site Decommissioning – protection of existing groundwater resources being utilized by the local population.
- Golf Course – benefits of reduced mercury exposure and avoided hazardous waste disposal costs.

Case study write-ups contain the specific assumptions and economic values derived by the OMP.

4 EA Costs & Incremental Costs in OMP Case Studies

Since the Act is potentially one of a number of pieces of legislation requiring EA and/or the examination of environmental effects, the OMP focuses on areas where the Act imposes *incremental* costs to the proponent. This allowed a determination of where the Act's requirements drove potential impacts to business. Costs were identified as occurring during three different periods in the project cycle; assessment, project start-up and implementation.

- During the *assessment*, the Act may impose additional requirements for data collection, analysis, identification of mitigation measures and the development of follow-up plans. Alternatively, it may be the only regulatory driver of EA, and therefore responsible for all of the previously mentioned costs. *Total EA costs*, therefore, refer to all assessment study costs regardless of whether they are driven by the Act or provincial EA requirements. *Incremental assessment costs* refer specifically to those assessment costs driven by the Act. OMP results indicate that both types of assessment costs were minimal and not considered to be significant by proponents.
- Where EA's are mismanaged, they potentially put *project start-up* at risk. Typically proponents must carry out a number of parallel planning activities to ensure that, once the assessment receives approval, all the necessary pieces are in place to initiate a particular work or activity. These can include getting construction crews ready on site, ordering materials, etc. Where a construction season is missed often equipment needs to be removed from site, orders cancelled, etc. Project start-up incremental costs potentially place the proponent at risk competitively but were only identified in 3 of the 20 case studies developed by the OMP. These were considered to be the most significant business impact that potentially accrue to the proponent as a result of assessment.
- During *project implementation*, costs are realized as a result of mitigation measures and follow-up activities required by the Act. These are the third category of incremental costs imposed by the Act. Many of these represent positive benefits of the Act although they occur as financial costs to the proponent. One instance was identified where follow-up activities imposed significant incremental costs to the proponent. According to the RA, in Case Study 11 (Seasonal Road) the proponent did not use the EA as a document for project implementation. As a result the environmental monitor identified several significant deviations from agreed upon guidelines that resulted in re-construction costs of approximately \$1 million.

General OMP findings indicate that while all three types of incremental costs are present in screenings, there is an increasing shift towards project implementation costs as one moves towards comprehensive studies and panels. The sections that follow report findings for all three levels of assessment. Results are first reported in aggregate form; that is total EA costs, relative to incremental costs (i.e. all assessment study, start-up and implementation costs driven by the

Act), compared to total project capital costs. Incremental costs are then further broken down to show how the Act is functioning at each level of assessment.

4.1 Screenings

Screenings are the simplest form of assessment required under the Act and comprise the bulk of assessments conducted under the federal process. They vary in time, length, and depth of analysis, depending on the circumstances of the proposed project, the existing environment, and the likely environmental effects. Some screenings require only a brief review of the available information and a one- or two-page report. Others need new background studies and can be as thorough and rigorous as a comprehensive study. With possibly one exception the OMP study focussed on medium to large screenings¹⁰.

Table 4.1 summarizes OMP results. Total EA costs include costs of preparing the assessment report required by the Act as well as any other provincial EA regulations. Incremental costs include any assessment, project start up and/or implementation costs driven by the Act. Finally, project capital costs have been included to show the relative impacts of assessment and the Act on project implementation. Given the nature of projects that undergo screenings, one would expect a broad range of capital costs. Table 4.1 confirms this, showing a range of project capital costs between \$22,250 and \$100 million.

Table 4-1: Screening EA and Incremental Costs as a Percentage of Total Capital Costs

Project Name and Number	Total EA Cost	% Capital	Incremental Costs +	% Capital	Project Capital Cost
Water Pipeline (POC) (6)	\$ 1,325	6.0%	\$ 1,325	6.0%	\$ 22,250
Tree Clearing (2)	\$ 33,195	7.6%	\$ 283,760	65.1%	\$ 436,000
Flood Embankment (POC) (9)	\$ 41,000	13.7%	\$ 42,500	14.2%	\$ 300,000
Golf course (3)	\$ 143,686	4.8%	\$ 461,972	15.4%	\$ 3,000,000
CO ₂ Pipeline (NEB) (5)	\$ 387,925	2.8%	\$ 408,250	3.0%	\$ 13,700,000
Food Park (4)	\$ 100,600	0.5%	\$ 100,600	0.5%	\$ 18,500,000
Building ** (1)	\$ 397,751	1.3%	\$ 2,114,166	7.1%	\$ 30,000,000
Waste Water Treatment * (8)	\$ 380,000	1.0%	\$ 380,000	1.0%	\$ 40,000,000
Transmission Line (7)	\$ 180,000	0.4%	\$ 180,000	0.4%	\$ 50,000,000
Phosphate Mine Screening (10)	\$ 356,250	0.4%	\$ 1,475,000	1.5%	\$ 100,000,000

Sorted By Project Capital Costs

Note: (*) –also triggers provincial EA requirements; (**) indicates self initiated EA process by the proponent; NEB – assessment run under National Energy Board process; and POC – assessment developed under *Projects Outside Canada Regulation*; (+) Total EA costs are assessment study costs driven by the Act as well as any other provincial EA legislation.

One would also expect screenings to have the lowest *relative*¹¹ EA costs; reflecting the lower perceived risks associated with this level of assessment. OMP findings generally confirm this

¹⁰ Case Study 6 involves the construction of a water pipeline in Uganda under the POC regulation.

¹¹ Relative EA costs here are expressed as a percentage of total project capital costs

(see Table 4.1). With one exception, the average relative cost of screenings reviewed by the OMP was 2.9% (range of 0.4% - 7.6%) of project capital costs. This compares with 3.1% (range of 2.5% - 3.9%) for comprehensive studies and 1.5 % (ranging from 0.5% to 2.3%) for panels.

Results show that absolute screening costs were also low. Reported costs ranged from \$1,325 to \$382,600 compared to comprehensive studies (\$ 450,000 to \$1.1 million) and panels (\$1.3 million to \$ 28 million). Lower screening costs are indicative of the risks associated with these projects indicating that the Act is, in fact performing as one would hope.

Two groups of screenings emerge from this list.

Large capital projects have small relative EA costs

- (i) Projects with large capital costs ranging from \$13.7 million to \$100 million had small relative EA costs. With one exception, assessments were less than or equal to 0.6% of project capital costs.

Small capital projects have higher relative EA costs

- (ii) Projects with smaller capital costs, ranging from \$22, 250 to \$ 3.0 million, had higher relative EA costs ranging from 6.0% to 13.4%. This relatively large increase in the EA's costs is explained by a variety of reasons:
- Screenings included a study where natural resource management played a much larger role in the project and so, accounted for a greater proportion of the budget. *Flood Embankment (Case Study 9)*: screening cost of 13.7% of project capital costs reflect the fact that the assessment was an integral component of a watershed management project and therefore plays a bigger role in project design.
 - Screenings also included a study that identified potentially significant risks. This drove further studies and mitigation measures during project implementation. *Golf Course (Case Study 3)*: screening costs of 4.7% of project capital costs reflect the *perceived risk* of mercury contamination and the additional studies required for approval by the RA.
 - Screenings with low capital costs increase the relative costs of conducting an assessment. Some proponents interviewed felt that there may be a minimal level for assessment costs making certain EA's unfeasible. In the *Water pipeline (Case Study 6)* EA costs (6.0%) represented several days of the proponent's time required to prepare the screening report. The low capital costs of the project are masked by the fact that the project was implemented overseas where the cost of labor and types of materials used are relatively cheap.

Incremental costs are summarized in Table 4.1 and further broken down in Table 4.2. OMP results distinguish assessment, start-up, and implementation costs.

Table 4-2: Summary of Incremental Costs for Screenings

Incremental Activity	Absolute and Relative EA Cost									
	1 Building*	%	2 Tree	%	3 Golf Course	%	4 Food Park*	%	5 CO ₂ Pipeline	%
EA Start Up	\$ 2,813	0.7%	-	-	\$ 1,584	1.1%	-	-	\$ 5,325	1.4%
EA Report Preparation	\$ 129,469	32.6%	-	-	-	-	-	-	-	-
Additional studies	-	-	\$ 33,195	100.0%	\$ 140,874	98.0%	\$ 5,550	5.5%	\$ 382,600	98.6%
Screening Preparation	-	-	-	-	-	-	-	-	-	-
EA Report Evaluation & Approval Decision	\$ 15,469	3.9%	-	-	\$ 1,228	0.9%	-	-	-	-
Internal Time	-	-	-	-	-	-	-	-	-	-
Lawyer's Fees	-	-	-	-	-	-	-	-	-	-
Federal/Provincial Coordination	-	-	\$ -	0.0%	\$ -	-	\$ 2,000	2.0%	\$ -	-
Sub-total of Incremental EA Costs	\$ 147,751	37.1%	\$ 33,195	100.0%	\$ 143,686	100.0%	\$ 7,550	7.5%	\$ 387,925	100.0%
Other EA Costs*	\$ 250,000	62.9%	-	-	-	-	\$ 93,050	92.5%	-	-
Total EA Cost	\$ 397,751	100.0%	\$ 33,195	100.0%	\$ 143,686	100.0%	\$ 100,600	100.0%	\$ 387,925	100.0%
PROJECT DELAYS										
Financing Costs	\$ 819,268	2.7%	-	-	-	-	-	-	-	-
Legal and Prof. Fees	\$ 63,000	0.2%	-	-	-	-	-	-	-	-
Management	\$ 194,146	0.6%	-	-	-	-	-	-	-	-
Winter Protection Costs	\$ 600,375	2.0%	-	-	-	-	-	-	-	-
Sub-total Project Delays	\$ 1,676,789	5.6%	-	-	-	-	-	-	-	-
PROJECT IMPLEMENTATION ACTIVITY										
Absolute and Relative Project Implementation Costs as a Percentage of Total Capital Costs										
Mitigation Measures	\$ 7,813	0.0%	-	-	-	-	-	-	-	-
Monitor & Measure waterable	-	-	\$ 250,571	57.5%	-	-	-	-	-	-
Landscaping & replanting	-	-	-	-	\$ 313,364	10.4%	-	-	-	-
Cap greens, stockpile	-	-	-	-	-	-	-	-	-	-
Follow Up Program	\$ 31,813	0.1%	-	-	\$ 2,856	0.1%	-	-	-	-
Env. Auditor onsite	-	-	-	-	\$ 4,922	0.2%	-	-	\$ 20,325	0.1%
Monitoring studies	-	-	-	-	-	-	-	-	-	-
Sub-total Incremental Implementation Costs	\$ 39,626	0.1%	\$ 250,571	57.5%	\$ 321,142	10.7%	-	-	\$ 20,325	0.1%
TOTAL CAPITAL COSTS	\$ 30,000,000		\$ 436,000		\$ 3,000,000		\$ 18,500,000		\$ 13,700,000	

* Indicates projects had other EA requirements

Incremental Activity									
Absolute and Relative EA Cost									
	6 Water Pipeline	%	7 Trans- mission Line	%	8 Water Treatment*	%	9 Flood	%	10 Phosphate
EA Start Up	-	-	-	-	-	-	-	-	-
EA Report Preparation	-	-	-	-	-	-	-	-	-
Additional studies	-	-	-	-	-	-	-	-	-
Screening Preparation	\$ 1,325	100.0%	\$ 180,000	100.0%	\$ 260,000	68.4%	\$ 1,500	3.5%	\$ 356,250
EA Report Evaluation & Approval Decision	-	-	-	-	-	-	-	-	-
Internal Time	-	-	-	-	-	-	-	-	-
Lawyer's Fees	-	-	-	-	\$ 120,000	31.6%	-	-	-
Federal-Provincial Coordination	-	-	-	-	-	-	-	-	-
Sub-total of Incremental EA Costs	\$ 1,325	100.0%	\$ 180,000	100.0%	\$ 380,000	100.0%	\$ 1,500	3.5%	\$ 356,250
Other EA Costs*	-	-	-	-	-	-	\$ 41,000	96.5%	-
Total EA Cost	\$ 1,325	100.0%	\$ 180,000	100.0%	\$ 380,000	100.0%	\$ 42,500	100.0%	\$ 356,250
PROJECT DELAYS									
Absolute and Relative Project Delay Costs as a Percentage of Total Capital Costs									
Financing Costs	-	-	-	-	-	-	-	-	\$ 1,000,000
Legal and Prof. Fees	-	-	-	-	-	-	-	-	-
Management	-	-	-	-	-	-	-	-	-
Winter Protection Costs	-	-	-	-	-	-	-	-	-
Sub-total Project Delays	-	-	-	-	-	-	-	-	\$ 1,000,000
PROJECT IMPLEMENTATION ACTIVITY									
Absolute and Relative Project Implementation Costs as a Percentage of Total Capital Costs									
Mitigation Measures	-	-	-	-	-	-	-	-	-
Monitor & Measure watertable	-	-	-	-	-	-	-	-	-
Landscaping & replanting	-	-	-	-	-	-	-	-	-
Cap greens, stockpile	-	-	-	-	-	-	-	-	-
Follow Up Program	-	-	-	-	-	-	-	-	-
Env. Auditor onsite	-	-	-	-	-	-	-	-	-
Monitoring studies	-	-	-	-	-	-	-	-	-
Sub-total Incremental Implementation Costs	-	-	-	-	-	-	-	-	\$ 118,750
TOTAL CAPITAL COSTS	\$ 22,250	-	\$ 50,000,000	-	\$ 40,000,000	-	\$ 300,000	-	\$ 100,000,000

* Indicates projects had other EA requirements

- (iii) *Incremental Assessment Costs*: the Act is the primary regulatory driver of EA in all but three of the screenings reviewed. As a result EA report preparation shows up consistently as an incremental assessment cost for the majority of the screenings. Accordingly the Act accounts for 100% of the EA costs. Where other drivers of EA are in place the Act affects costs through requirements for "additional studies". In case studies 1, 4 and 8 incremental assessment costs were 37.1%, 7.5% and 0.6% of total EA costs respectively.
- (iv) *Project Start-up Costs*: Only one project subject to a screening experienced project delays linked to the Act.
- *Case Study 1 (Building)*: In this project the proponent voluntarily undertook an assessment for the project prior to the promulgation of the Act. With the enactment of the Act, regulatory authorities deemed that the Act had been triggered and that both public consultation and additional studies were required. The additional time required to meet these obligations resulted in costly project start-up delays; amounting to 5.6% (or \$1,676,789) of total project capital costs.

In all other screenings the assessment process was managed appropriately.

- (v) *Project Implementation Costs*: OMP results indicate that while the Act has an impact on project implementation, costs incurred were largely insignificant (0.1 or less of total project capital costs). Two exceptions are worth noting:
- *Case Study 2 (Tree Clearing)*: the mitigation measures required by the Act were used as a regulatory justification to fund the majority of a project's expenses - incremental project implementation costs were 57.5% of total capital costs for this case study.
 - *Case Study 3 (Golf Course)*: plans to re-surface a golf course were significantly altered by the driven mitigation measures to deal with mercury identified on site. Incremental costs here amounted to 10.7% (or \$321,142) of capital costs, indicating that the Act has played a role in determining the project's design as well as follow-up (monitoring studies and environmental monitors on site).

Mitigation measures required by enforceable regulations were screened out as being non-incremental. In almost all case studies developed under the OMP, the *Fisheries Act* was a strong driver of mitigation. As a result most measures identified in Table 4.2 are terrestrial. Follow-up programs were much more difficult to obtain information on. In most cases either projects had not been completed at the time of the OMP, or follow-up activities were not being managed as a discrete program by the RA. Without exception, OMP case studies showed that no official budget had been prepared for follow-up. Often these activities were subsumed under other budgets.

4.2 Comprehensive Study Costs

Comprehensive studies are more intensive and tend to be carried out on larger, more environmentally risky projects. For this reason they are also more likely to trigger other provincial EA requirements. Table 4.3 indicates that 4 out of 6 comprehensive studies reviewed by the OMP involved provincial jurisdictions. In these instances EA costs shown are composite figures of both federal and provincial requirements. EA costs are reviewed here first, followed by a discussion on incremental costs driven by the Act.

With the exception of one project, relative EA costs for comprehensive studies are higher than screenings; averaging 3.1% of capital costs over a range of 2.5% - 3.9% of project capital costs¹². This reflects the higher level of risk being managed by this level of assessment. The Act objectives of ensuring the appropriate level of effort for each type of assessments appear to have been reflected in the OMP case studies examined.

Absolute EA costs are also higher than screenings; averaging \$870,514 compared to a screening average of \$178,631. This is expected, given the relative magnitude of project's subject to comprehensive studies as well as the increase in perceived risk.

Table 4-3: Comprehensive Study Costs and Incremental Costs as a Percentage of Total Capital Costs

Project Name and Number	Total EA Cost	% Capital	Incremental Costs [†]	% Capital	Project Capital Cost
Seasonal Road * (15)	\$ 450,000	3.9%	\$ 1,450,000	12.5%	\$ 11,600,000
Base Decommissioning (14)	\$ 605,670	2.9%	\$ 1,290,565	6.2%	\$ 21,000,000
Mining Decommissioning * (12)	\$ 1,000,000	2.5%	\$ 1,168,750	2.9%	\$ 40,000,000
Gold Mine (Phase I) **	\$ 1,200,000	3.0%	\$ 1,416,000	3.5%	\$ 40,000,000
Copper Mine * (11)	\$ 1,096,904	0.8%	\$ 22,279,469	15.9%	\$ 140,000,000
Wood Preservers (13)	\$ 152,500	1.6%	\$ 347,500	3.7%	\$ 9,300,000

Sorted By Project Capital Costs

Note: (*) – indicates additional requirement for a provincial EA; (**) indicates self initiated EA process by the proponent; (†) Total EA costs are included in the incremental costs.

Incremental costs are summarized in Table 4.3 and further broken down in Table 4.4.

- (i) *Incremental Assessment Costs*: the Act is the primary regulatory driver of EA in only 2 of the 6 case studies developed. In these instances the Act is responsible for 100% of the assessment costs incurred. In the other 4 case studies developed by the OMP (11, 12, 15 and 16) incremental assessment costs reflect the Act's requirements for cumulative effects investigations, emergency response plans, public consultation, etc. In other

¹² The Copper Mine EA costs appear to be somewhat low for this category. One explanation for this is that the relatively high capital costs of this project offset the relative EA costs.

words, the value added of the Act to the assessment process. The impact of these costs are 0.6% to 36.9% of the assessment costs.

- *Case Study 16 (Gold Mine):* The proponent undertook extensive public consultations and environmental studies prior to the triggering of the Act. An agreement had also been made with local authorities to forgo provincial EA requirements based on this work. While the Act was the only regulatory requirement for assessment, the proponent was able to realize costs savings by being able to use the results of previous consultation efforts and studies. Resulting incremental costs were focused at the assessment level accounting for only 0.8% of total capital costs.

Table 4-4: Comprehensive Study Incremental Costs

Incremental Activity	Absolute and Relative EA Cost											
	11 Copper*	%	12 Mine Decomm.*	%	13 Wood	%	14 Base Decomm	%	15 Seasonal Road*	%	16 Gold Mine**	%
EA Start Up												
Environmental Coordination	-	-	-	-	-	-	-	-	-	-	-	-
Environmental Coordinator – Operations	-	-	-	-	-	-	-	-	-	-	\$ 100,000	8.3%
Environmental Coordinator – Construction	-	-	-	-	-	-	-	-	-	-	\$ 100,000	8.3%
Project Manager	-	-	-	-	-	-	\$ 5,842	1.0%	-	-	-	-
EA Report Preparation												
Comprehensive Study Preparation	-	-	-	-	-	-	-	-	-	-	\$ 354,000	29.5%
Public Review	\$ 10,000	0.9%	-	-	-	-	-	-	\$ 2,500	0.6%	\$ 65,000	5.4%
Internal Administration	-	-	\$ 75,000	7.5%	-	-	\$ 66,670	11.0%	-	-	-	-
Baseline Data (Ecological Studies	-	-	-	-	-	-	\$ 539,000	89.0%	-	-	-	-
Cumulative Effects, Alternatives, Emergency Response / Contingency Plans)	\$ 23,904	2.2%	-	-	-	-	-	-	-	-	-	-
EA Report Evaluation & Approval Decision												
Internal Time/Agency Review	-	-	\$ 193,750	19.4%	-	-	\$ 23,074	3.8%	-	-	-	-
Federal-Provincial Coordination												
Determining equivalency of federal/provincial EA processes	-	-	-	-	-	-	-	-	-	-	\$ 3,000	0.3%
Sub-total of Incremental EA Costs	\$ 33,904	3.1%	\$ 268,750	26.9%	\$152,500	100%	\$ 634,586	100%	\$ 2,500	0.6%	\$ 622,000	51.8%
Other EA Cost	\$1,063,000	96.9%	\$ 731,250	73.1%	-	-	-	-	\$ 447,500	99.4%	\$ 578,000	48.2%
Total EA Cost	\$ 1,096,904		\$1,000,000		\$152,500		\$ 634,586		\$ 450,000		\$1,200,000	

Table continues on next page.

PROJECT DELAYS												
Absolute and Relative Project Delay Costs as a Percentage of Total Capital Costs												
	11 Copper*	%	12 Mine Decomm.*	%	13 Wood	%	14 Base Decomm	%	15 Seasonal Road*	%	16 Gold Mine**	%
Site Carrying Costs, (security, effluent mgmt., utilities etc.)	-	-	\$ 93,750	0.2%	-	-	-	-	-	-	-	-
Additional Road Construction to Meet Production Deadlines	\$ 2,500,000	1.8%	-	-	-	-	-	-	-	-	-	-
Flight Transportation Cost for Sag Mill	\$ 225,000	0.2%	-	-	-	-	-	-	-	-	-	-
Lost Revenue from Fallen Copper Prices	\$18,435,565	13.2%	-	-	-	-	-	-	-	-	-	-
Sub-total for Project Delays	\$21,160,565	15.2%	\$ 93,750	0.2%	-	-	-	-	-	-	-	-
PROJECT IMPLEMENTATION ACTIVITY												
Absolute and Relative Project Implementation Costs as a Percentage of Total Capital Costs												
Mitigation Measures												
Dam & spillway redesigned	-	-	\$ 75,000	0.2%	-	-	-	-	-	-	-	-
Erosion Control	-	-	-	-	-	-	\$ 655,979	3.1%	-	-	-	-
Feasibility Studies & Soil Cap	-	-	-	-	-	-	-	-	-	-	\$ 56,000	0.1%
Follow Up Program												
Studies & Follow up	-	-	-	-	-	-	-	-	-	-	\$ 160,000	0.4%
Monitoring	\$ 22,000	0.0%	-	-	\$ 115,000	1.2%	-	-	-	-	-	-
Design modifications	-	-	-	-	\$ 80,000	0.9%	-	-	-	-	-	-
Compliance costs for deviating from EA during construction.	-	-	-	-	-	-	-	-	\$ 1,000,000	8.6%	-	-
Sub-total Incremental Implementation Costs	\$ 22,000	0.0%	\$ 75,000	0.2%	\$ 195,000	2.1%	\$ 655,979	3.1%	\$ 1,000,000	8.6%	\$ 216,000	0.5%
Project Capital Costs	140,000,000		\$40,000,000		\$9,300,000		\$ 21,000,000		\$ 11,600,000		\$ 40,000,000	

Note: (*) – indicates additional requirement for a provincial EA; (**) indicates self initiated EA process by the proponent

- (ii) *Project Start-up Costs*: The OMP identified two comprehensive studies which resulted in projects delays linked to the Act. In all other cases the Act was managed properly with no resulting impacts on project start-up. Only one project delay resulted in a significant impact, both cases are explained here:
- *Case Study 11 (Copper Mine)*: late triggering of the Act resulted in a re-scoping of the assessment halfway through the provincial EA process. The Act called for the additional consideration of cumulative effects, alternatives means as well as the development of emergency and contingency plans – all of which required additional public consultation. Resulting project implementation delays had a number of impacts including the construction of an additional road (\$2.5 million) and flying up a mill from Brazil (\$225,000¹³) to meet restricted project implementation schedule. Delays also resulted in \$18.4 million in lost revenue, attributed to decreases in world copper prices. Project start-up costs totaled approximately \$21 million (16% of capital costs). Impacts to competitiveness are considered significant. The proponent had to re-negotiate project loans as well as apply to the Job Protection Commission for tax cuts and employee wage cuts.
 - *Case Study 12 (Mine Decommissioning)*: Once a draft EA was submitted to the RA, approximately 6 months were required for approval and an additional 6 months were required for posting the EA for public comment, receiving Ministerial Approval and a mandatory 3 month licensing period. During this time the proponent incurred approximately \$1.5 million in site carrying costs (including site security, effluent management, utilities, etc.). Only a small percentage of the total time could be attributed to inefficiencies in the review and approval process. The rest of the time reflected standard times allowed for public review, Ministerial approval and the RA's licensing process. Resulting costs attributed by the OMP equal \$93,750 or 0.2% of capital costs and cannot be considered significant impact on the proponent's competitiveness.
- (iii) *Project Implementation Costs*: the Act drove incremental mitigation costs in three of the comprehensive studies examined (case studies 12, 14 and 16). Since these measures account for 0.2%, 3.1% and 0.1% of total capital costs they were not considered a significant competitive impacts for the proponent. Like screening studies, mitigation measures identified as incremental benefits tended to focus on terrestrial impacts. This reflects the strong role the *Fisheries Act* plays in determining project implementation costs as an enforceable piece of regulation. It also demonstrates how the Act goes beyond regulations to achieve a broader range of sustainable benefits.

Act-driven follow-up measures were only identified in three studies (Case Study 11, 15 and 16). They took the form of:

- monitoring in Case Study 11 (\$20,000 – insignificant in terms of project capital costs);

13 This cost represents the difference between shipping and flying the mill to Canada

- compliance costs to the proponent for deviating from the assessment in Case Study 15 (\$1.0 million or 8.6% of capital costs); and
- follow-up studies in Case Study 16 (\$160,000 or 0.4% of capital costs).

In only one instance can these costs be considered significant (Case Study 15). There, the proponent could have avoided these costs if they had complied with the conditions of approval. Here the costs can be considered as a societal benefit and a positive outcome of the Act.

4.3 Joint Panel Costs

Panel Reviews are carried out when, following a screening or a comprehensive study, it is determined that a project requires further evaluation. These projects are referred to the Minister of the Environment for a review by an independent and public panel. Panel reviews offer large numbers of groups and individuals with different points of view a chance to present information and express concerns. Joint Panels are conducted when more than one jurisdiction requires an EA for project approval. Table 4.5 shows the four joint panels reviewed by the OMP study.

Project capital costs were high, ranging between \$57.2 million and \$2 billion. All were large scale projects involving natural resource extraction or management. Three out of four of these assessments were initiated as panels. Case Study 19 was bumped-up after having been initiated as a comprehensive study.

Panel and Comprehensive Study Costs Are Comparable As A Percent of Project Capital Costs

Findings indicate that relative EA costs for panels are lower than those of comprehensive studies; averaging 1.2% (ranging from 0.5% to 2.7%) of project capital costs. One might expect them to be slightly higher, given that the decision to bump-up suggests a greater degree of public concern and, therefore, a higher level of scrutiny. Potential explanations include:

- The actual work done to meet regulatory approval may not change between comprehensive studies;
- Costs of public reviews for proponents are low relative to total EA costs; and
- Project capital costs are large enough that relative EA costs do not change.

If we examine absolute EA costs we find that they are, in fact, higher than comprehensive studies, averaging \$8.5 million, though over a large range (\$1.3 million to \$ 28 million). In other words there is an increase in the absolute effort made in relation to panel studies.

Table 4-5: Joint Panel EA and Incremental Costs as a Percentage of Total Capital Costs

Project Name and Number	Total EA Cost	% Capital	Incremental Costs ⁺	% Capital	Project Capital Costs
Water Diversion * (17)	\$ 1,300,000	2.27%	\$ 6,010,000	10.5%	\$ 57,200,000
Natural Gas Pipeline/ Offshore Drilling *	\$ 3,015,000 N.A. ¹⁴	0.46%	\$ 3,120,525 0	0.5% 0.0%	\$ 650,000,000 \$ 2,016,000,000
Sub total (18)					
Oil Pipeline * (19)	\$ 1,700,000	0.26%	\$ 11,700,000	1.8%	\$ 649,524,000
Offshore Oil (Phase 1)* (20)	\$ 28,000,000	1.40%	\$ 42,000,000	2.1%	\$ 2,000,000,000

Sorted By Project Capital Costs

Note: (*) – indicates additional requirement for a provincial EA; (+) Total EA costs are included in incremental costs.

Incremental costs are shown in Table 4.5 and are further broken down in Table 4.6 below.

- (i) *Incremental Assessment Costs*: the Act is one of many regulatory drivers of EA and environmental management at this level of assessment. All joint panels reviewed involved multiple jurisdictions reflecting the geographic scope and size of the projects being undertaken. As a result EA report preparation does not show up as an incremental cost in any of the panels. One exception is, however, worth noting:
- *Case Study 18 (Offshore Drilling and Natural Gas Pipeline)*: the Act drove cumulative effects reporting requirement's, however, no additional baseline work was necessary to prepare this part of the report. The relatively insignificant costs indicated represent the in-house time required to pull the necessary information together to address this issue.
- (ii) *Project Start-up Costs*: These are potentially the most significant for all levels of assessment. Given the absolute scale and complexity of the projects involved, delays can represent potentially staggering costs. For this reason, panels are carefully managed with regard to their duration. Of the four joint panels reviewed, only two experienced start-up delays:
- *Case Study 20 (Offshore Oil)*: Lost income as a result of project implementation delays were calculated by the proponent to approximate \$14 million (0.7% of project capital costs). Additional costs were incurred by the proponent when, as a result of delays, the (undisclosed) costs of specially designed equipment was increased. Costs of an unharmonized process would have probably been higher. This figure could, therefore, be used as a measure of the potential benefit of harmonization where it does work effectively.
 - *Case Study 19 (Oil Pipeline)*: The proponent reported \$7.5 million in construction delay costs (these were paid out for keeping people and equipment on site). If anything, the Oil Pipeline (Case Study 19) shows evidence of having rushed the

14 The proponent was unable to provide total EA or project costs in the time available to the OMP study.

review process to accommodate the proponents scheduled start-up so it is uncertain whether or not these costs can fairly be attributed to the Act.

- (iii) *Project Implementation Costs:* In the four panel case studies examined the multi-jurisdictional interests involved ensured that many elements of follow-up would take place with or without the Act's involvement. For instance all mitigation measures identified reflected existing regulatory requirements, proponent driven innovations or shared requirements with other EA jurisdictions. This being said, the Act also requires the verification/reporting on the accuracy of impact predictions. Most panel case studies were still in early stages of project implementation. It was, therefore, too early for the OMP to determine the Act's incremental impact on follow-up activities. As with other levels of assessment specific budgets for follow-up activities had not been included in the assessment.

Table 4-6: Incremental Costs for Joint Panels

Incremental Activity	Absolute and Relative EA Cost					
	17 Water Mgmt.*	%	18 Offshore Gas & Pipeline*	%	19 Oil Pipeline*	20 Offshore Oil*
EA Start Up	-	-	-	-	-	-
EA Report Preparation	-	-	-	-	-	-
Baseline Studies	-	-	\$ 105,525	3.5%	-	-
Panel Review	\$ 162,000	12.5%	-	-	-	-
Requests for Additional Information	-	-	-	-	-	-
Federal-Provincial Co-ordination	-	-	-	-	-	-
Overhead Incurred by Proponent due to Delays in Harmonizing EA Process	-	-	-	-	-	\$ 2,303,500
Sub-total of Incremental EA Costs	\$ 162,000	12.5%	-	-	-	\$ 2,303,500
Other EA Costs	\$ 1,138,000	87.5%	\$ 2,909,475	96.5%	-	\$ 25,696,500
Total EA Cost	\$ 1,300,000	100%	\$ 3,015,000	100%	\$ 1,700,000	\$ 28,000,000
PROJECT START-UP COSTS						
Lost Revenue from Delays (\$2 million / month)	-	-	-	-	-	\$ 14,000,000
Increased Costs of Capital from Project Delays (10-15% increased vessel price)	-	-	-	-	-	Confidential
Retainers to keep construction crews on site	-	-	-	-	\$ 7,500,000	-
Court Challenges	-	-	-	-	\$ 2,500,000	-
Sub-Total of Project Delays	-	0.0%	-	0.0%	\$ 10,000,000	\$ 14,000,000
PROJECT IMPLEMENTATION COSTS						
Mitigation Measures	Absolute and Relative Project Implementation Costs as a Percentage of Total Capital Costs					
Various Water Quality Plans	\$ 4,710,000	8.2%	-	-	-	-
Follow Up Program	-	-	-	-	-	-
Monitoring	-	-	-	-	-	-
Sub-Total Implementation Costs	\$ 4,710,000	8.2%	-	-	-	-
Project Capital Costs	\$ 57,200,000	-	\$ 650,000,000 (pipeline) \$2,016,000,000 (offshore)	-	\$649,524,000	\$ 2,000,000,000

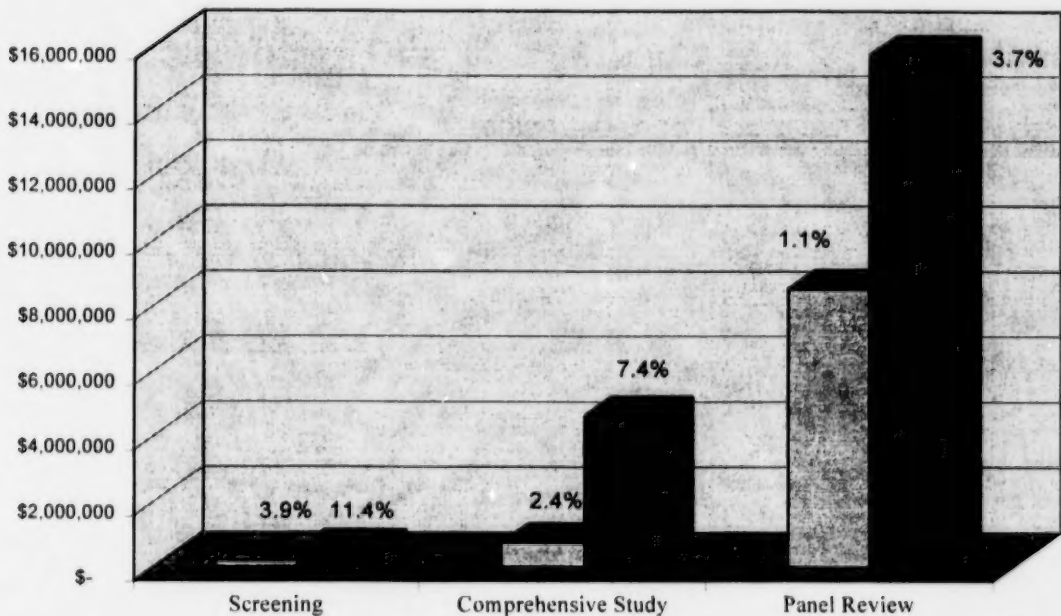
Note: (*) – indicates additional requirement for a provincial EA

4.4 Cost Summary

With one exception proponents interviewed felt that the costs imposed by the Act or the EA process were disproportionate to the benefits. The Act was a primary driver of assessment costs and requirements at the screening level. As one moves to comprehensive studies and panels there is an increasingly multi-jurisdictional context driving assessment. Thirty percent (30%) of screenings, 70% of comprehensive studies and 100% of joint panels involved provincial EA requirements or proponent driven assessments. As a result the Act becomes less of a driver of assessment costs than of incremental costs (see Figure 4.1).

Figure 4-1

Comparison of Assessment and Incremental Costs for Screenings, Comprehensive Studies and Joint Panels
(also expressed as a percentage of total project capital)



□ Average EA Cost

■ Average Incremental Cost Attributable to CEAA

Incremental costs were further broken to better understand how the Act functions at each level. This is particularly important if one is to understand how the Act functions as one of several regulatory drivers of assessment. It is also important if one is to determine the Act's potential impacts to business.

- (i) *Assessment Costs:* The role, and therefore costs, of EA in general changes for different types of projects. EA's play a much more significant part of project development for projects involving natural resource management. Screenings averaged 2.9% of capital costs, while projects involving natural resource management at this level were much higher at 7.6% and 13.4% of project capital costs. None of the proponents interviewed for any of the twenty case studies developed considered assessment costs to be unreasonable. Further, where the Act acted in conjunction with other regulatory drivers of EA average incremental cost were 13.7% (over a range of 0.6% to 37.1%) of total assessment costs. Generally these costs reflected the Act's value added (i.e. consideration of cumulative effects, public consultation, emergency response plans, alternatives). The proponent for Case Study 20 reported \$2.3 million in overhead incurred as a result of delays in the harmonization process. This amounts to 8.2% of assessment costs or 1.2% of project capital costs. Since harmonization results in many other cost savings it is not clear if these costs were not offset by other savings. It was also unclear how much of the delay can be attributed to the mismanagement of the Act. With perhaps one exception, neither EA costs or the Act's incremental impacts to this stage of planning were considered to have a significant impact to business operations.
- (ii) *Project Start-up Costs:* These were identified when some aspect of the Act was mismanaged by the proponent or the RA. Examples of these costs are shown in Exhibit 4.1. At least one case study at each level of assessment identified instances where the proponent incurred significant costs as a result of poor scoping decisions and/or lack of RA involvement during EA report preparation. A significant contributor to costs was the fact that the Act had just been promulgated and there was a fair degree of uncertainty with regard to triggering, RA responsibilities, etc. Proponents and RA's interviewed stated that they expect these costs to disappear as various stakeholders apply lessons learned and the Agency continues to develop guidelines / operational policy statements that clarify uncertainties.

Exhibit 4.1 Project Start-up Costs

Project start-up costs occurred when some aspect of the Act was mismanaged during the assessment process. These were identified by the OMP as being the one potential significant business impact resulting from the assessment process. As a result of delays in approval proponents risk:

- Putting loan repayment schedules at risk with delays in production (most large projects are financed through major loans with credit institutions);
- lost production time and therefore lost profits;
- missed market peaks in the prices of the resource to be extracted and therefore a loss in profit;
- retainers to consultants to ensure their ongoing availability;
- retainers to contractors to keep them ready for project start-up at the site;
- payments to contractors for equipment removal where seasonal windows for construction are missed as a result of delays;
- higher risks and liabilities associated with mine sites that are no longer active, but haven't been decommissioned; and
- for the public sector, delays resulted the project being implemented during another fiscal

- (iii) *Project Implementation Costs:* Given the complex regulatory framework that exists for large-scale projects under panel review, the Act's role virtually disappears as a driver of cost during implementation. The Act driven mitigation measures identified as incremental costs appeared in screenings and comprehensive studies. Generally these mitigation measures were terrestrial, reflecting the extent to which the Fisheries Act drives mitigation measures in aquatic habitat. *Project implementation costs reflect the Act's value added to sustainability since they represent incremental measures required to avoid adverse impacts associated with development that fall outside of existing regulation.* Follow-up costs include additional studies, environmental monitoring and compliance costs, all measures necessary to ensure:
- the effectiveness of mitigation measures; and
 - unforeseen impacts are identified and controlled.

In summary, incremental costs require careful interpretation. The Act drives 100% of the assessment costs where it's the only regulatory driver of assessment. Where it works in combination with other drivers, the Act works to fill in gaps not met by provincial EA requirements. Since the OMP focused on identifying incremental costs figures are not available to show what percent of mitigation measures are driven relative to the Act to those driven by other requirements. However it is clear that the Act works to fill in regulatory gaps and provide for their enforcement. This is assured through requirements to examine and mitigate project effects (particularly cumulative effects) as well as carry out follow-up programs for verification. While OMP results indicate that follow-up requires further strengthening as a requirement of the Act they also indicate the potential benefits from these activities. Incremental project start-up costs were shown to be an indicator of where the Act is not operating as it should. While the cause of these problems are discussed more extensively in Chapter 5 most stakeholders

interviewed stated that these problems represented challenges particular to the transition period between EARPGO and the Act.

5 Issues & Recommendations

The preceding chapters reviewed societal benefits and costs related to the Act identified by the OMP in 20 case studies. This final chapter focuses on a range of factors that affected the potential benefits and costs identified by the OMP. These are organized into two groups:

- The first recognizes challenges (and costs) related to the recent enactment of the Act. These are largely transitional in nature.
- The second group identifies systemic issues related to the wording of the Act, its regulations, guidelines and operational policy statements. These have the potential to cause re-occurring costs if not addressed.

Causal factors in each group are compared and contrasted based upon evidence taken from a range of case studies. Observations and issues raised by various stakeholders are analyzed with a range of potential remedial measures being identified. Based upon the costs and benefits of each we recommend a series of policy or administrative reforms that would increase benefits without incurring unnecessary commiserate costs. Recommendations are linked with one another throughout the chapter and summarized/prioritized in the final section.

5.1 Transitional Issues Related To The Recent Enactment of the Act

The Act is a relatively new piece of legislation. As a result, a number of regulations, reference guides and operational policy statements have been developed over the past four years to help implement/clarify the intent of the Act as well as to capture best practice (see Table 5.1).

Table 5-1: Regulations, Guides and Operational Policy Statements Associated with the Act

Regulations	Responsible Authority's Reference Guides	Operational Policy Statements
- Comprehensive Study List Regulations - Exclusion List Regulations - Inclusion List Regulations - Law List Regulations - Projects Outside Canada Environmental Assessment Regulations - Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements	- Addressing Cumulative Environmental Effects - Public Registry - Determining Whether A Project is Likely to Cause Significant Adverse Environmental Effects - Assessing Environmental Effects on Physical and Cultural Heritage Resources - Reference Guide for the Federal Coordination Regulations - Minister's Guidelines: Procedures for an Assessment by Review Panel	- Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act - Establishing the Scope of the Environmental Assessment - Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act

The OMP identified two major problems with the transitional period of the Act's enactment:

- Not all guidelines or operational policy statements were available to proponents at EA start-up;
- Not all RA project managers understood the Act or were aware of the guidelines and operational policy statements.

These are discussed further below.

Not all guidelines & operational policy statements were available to proponents at EA start-up.

A number of projects reviewed by the OMP were initiated around the time the Act came into force. As a result there was a great deal of uncertainty on the part of various stakeholders involved as to:

- roles and responsibilities related delegation of responsibilities, follow-up, etc.,
- how harmonization with other EA processes was to take place, and
- the interpretation of concepts such as cumulative effects under the new Act.

Three case studies illustrate this point:

- Case Study 1 (Building):** In this project the RA was involved in selecting and purchasing a site for a Crown Corporation to build upon. While the latter undertook to carry out a self directed assessment of the selected site, property ownership had not been transferred prior to the Act coming into force. Once the RA realized that it had triggered the Act it required that the proponent collect additional assessment information, even though the Crown Corporation had hired two experts that had ascertained that the EA met the Act's requirements. Without

the *Responsible Authority's Guide* available to provide further direction, the RA felt that it had to meet the highest standard possible especially given the public attention of this particular project. Resulting construction delays cost the proponent approximately \$1.5 million or 6% of total project capital costs.

- *Case Study 11 (Copper Mine)*: Similarly, lack of guidelines contributed to uncertainty over the Act's application in this case study. Like Case Study 1 an assessment was in progress when the Act came into force. This raised, for the first time, issues of harmonization, multiple triggers as well as jurisdiction that guidelines might have helped to solve in a timely fashion. This slowed the time required to scope, review and approve the EA. The OMP identified significant project start-up costs of approximately \$21 million valued at 16% of the projects total capital costs.
- *Case Study 20 (Offshore Oil Drilling)*: In this case study delays in selecting panel members as well as signing the memorandum of understanding between the lead RA and the CNOPB contributed to project start-up costs (lost revenues of \$14 million as well as a 10-15% increase in the purchase price of a vessel). Arguably the Procedures for an Assessment by Review Panel, harmonization agreements and the *Responsible Authority's Guide* developed subsequent to this project would have helped reduce both the time and uncertainty associated with the decisions made on this panel.

These case studies all show significant costs incurred by proponents as a result of delays to project start-up. They are, in fact the most significant costs identified by the OMP study in the 20 case studies developed. Without exception proponents, RA's and non government organizations (NGO) groups involved felt that many of the problems encountered in these projects were unlikely to repeat themselves in light of lessons learned and the subsequent development of guidelines and operational policy statements listed in Table 5.1. The fact that similar problems were not identified by the OMP in more recently initiated projects indicate that these documents are having a positive impact on the outcome of federal assessments conducted under the Act.

In our opinion the OMP initiative will continue to improve regulations, guidelines and operational policy statements by providing ongoing information to the Agency as to the effectiveness of the various regulations, guidelines and operational policy statements developed. Further improvements are addressed through recommendations presented in the sections that follow.

Not all RA project managers understood the Act or were aware of the Act Guidelines & Operational Policy Statements.

A second issue identified through OMP case studies was that not all RA project managers understood the Act or were aware of regulations, guidelines, and operational policy statements. We consider this to be an ongoing transitional problem since it will occur whenever the Agency

develops new support tools for the Act. It stresses the importance of promoting new information and targeting the right people through training, web sites and other methods.

While many departments had experts, RA project managers play a key role in determining the extent to which assessments are integrated with other aspects of project planning. In some cases these managers had little or no training in assessment or the Act. Project managers in case studies 1, 2, 11 and 15 admitted to being either unaware or having limited knowledge of guidelines and/or operational policy statements. This potentially limits assessment quality in instances where project managers ultimately determine what level of effort should be devoted to various aspects of the EA study.

- *Case Study 2 (Tree Cutting)* potentially significant gaps on biophysical impacts bring into question the rationale for proposed mitigation measures. In this case study the project manager who led the development of the EA had received no training, though a departmental expert was involved in conducting the study.

A number of departmental experts interviewed by the OMP indicated that further training of project managers would help to improve the Act's integration with project development. A number of project managers also recommended that there be further promotion of the Act guidelines and operational policy statements by departments as they become available. No ideas were offered on how promoting might take place.

In our view there are a number of possible measures the Agency should consider; including:

- (i) *Working with other departments to identify training needs for project managers.* Not only would this training focus on the objectives of EA within the overall planning context, but it would focus on how information generated by assessments impact/change various decisions made by the project manager during this period. Training sessions could also be used to identify roles and responsibilities within departments and how they are to be coordinated during an assessment. The benefits of this approach is that it could be targeted at a specific group of decision makers. Since a number of courses already exist many of these could be used/adapted with little extra costs. Drawbacks are that training courses take time to implement.

Recommendation: Target RA Project Managers for Training

- (ii) The Agency should work with departmental EA experts to identify a communication strategy targeted at further promoting Act information. For instance provincial and or federal departments with web sites dealing with EA could be linked to the Agency's site. This could be done strategically where decision points being discussed on the site might involve multi-jurisdictional considerations. The advantage to this approach is that it facilitates rapid access to information on the Act by a key target group. The Agency could also produce newsletters and posters targeted at departmental staff without access to the web. These approaches are low cost and could be easily tested. They could also be used

to promote the department's website for those staff with internet access. We feel that the Agency already has basic elements of such a strategy in place. Improvements could be made strategically based upon available budget and resources. The strategy could target specific groups to provide them with relevant information on the Agencies latest developments. It could also be used as a means of feeding back information to the Agency to provide a conduit for identifying issues as they develop.

Recommendation: The Agency should strengthen its promotional/communication strategy related promoting the Act and its requirements as well as any new regulations, guidelines and operational policy statements.

- (iii) *Developing sectoral guidelines with line departments targeted directly at meeting project manager needs.* Given the general interest expressed by both RAs and proponents in sectoral guidelines we recommend their development as a top priority. The advantage of sectoral guidelines is that they provide information relevant to project manager's immediate needs as well as providing the support required by departmental EA experts. They can also be used to target and promote best practice identified within departments. While these guidelines may be costly to produce there is already examples to draw upon internationally as well as from information maintained by industry. The Agency should develop them in cooperation with departments, industrial organizations and NGO groups to facilitate their buy-in. Eventually these guidelines should be posted on departmental websites and cross linked with the Agencies' *Responsible Authorities Guide*. These guidelines can be used to address the information needs of RA project managers as well as of private sector proponents. They can include lists of likely authorities to contact for each class of project, issues to be addressed (super added responsibilities, information required in the assessment, possible permit triggers and how these should be managed. The only drawback to this approach is that it will be costly to implement since their development will require consultation with a wide range of stakeholders for their development.

Recommendation: The Agency should develop sectoral guidelines in consultation with line departments. :

5.2 Systemic Issues Related To The Act, Regulations, Guidelines & Operational Policy Statements

OMP findings indicate that there is ample room for interpretation of the Act by highly skilled practitioners. This is both a strength and a weakness. The strength is that as a result of this flexibility a number of innovative mechanisms have been identified which improve the efficiency/effectiveness of EA process. For the same reason, interpretation can lead to uncertainty with regard to the application of various sections of the Act. These challenges are discussed further in the sections that follow.

5.2.1 Triggering The Act

The OMP identified two issues related to triggers. The first relates to the late application of permitting triggers while the second deals with inappropriate triggering of Act. Both are discussed below.

Permitting Triggers Create Uncertainty in Project Planning

In theory, EA's work from broad project concepts to the particular. Early application of EA, before irrevocable decisions are made, facilitates a progressive/iterative scoping of issues. A number of the Act's triggers relate to very specific project considerations which are only developed at the stage of detailed design. In fact permitting triggers were identified in 40% of the case studies developed by the OMP. Triggers identified include:

- *Navigable Waters Protection Act* – stream crossing,
- *Fisheries Act* - fish habitat alterations,
- *Explosive Act* – development/use of explosives and related facilities, and
- *Ocean Dumping*.

Late triggering of the Act raises the possibility that proponents may have to either re-scope their assessment to meet the requirements of Section 16 of the Act or carry out additional assessments. For instance:

- *Case Study 20 (Offshore Oil)*: A late decision by the proponent to carry out ocean dumping activities resulted in the requirement for the development of a screening study post Panel review.
- *Case Study 18 (Offshore Drilling and Gas Pipeline)*: Here the onshore pipeline proponent is conducting one comprehensive study and two screening reports in addition to the Panel Study for lateral lines being proposed. Since these lines will be built later the proponent has time to collect the relevant information required and can use information approved in by the Panel to offset EA study costs.

While one provincial authority recommended that permitting triggers be re-evaluated as triggers for the Act, the OMP did not identify a problem of material significance in the case studies examined. In fact we feel that permitting triggers address specific environmental issues associated with the detailed stage of a project that cannot be ignored. In our opinion the issues raised by permitting triggers include:

- proponent uncertainty over EA reporting requirements, and
- the potential for project start-up delays and associated costs (see recommendations in sections 5.2.2 through 5.2.7 in this report).

Uncertainty over reporting requirements can be dealt with through two reforms.

- (i) *The Responsible Authorities Guide could be updated to acknowledge the challenges raised by permitting triggers.* It could include strategies for dealing with permitting uncertainties including;
- providing advice that RAs could give to proponents on the likelihood of triggering permits,
 - resulting assessment requirements (re-scoping versus separate EA); and
 - listing permitting triggers that trigger the Act.

Given that the Guide already exists, revisions would be relatively inexpensive to carry out. Drawbacks are that the information contained may be general enough to sensitize readers to potential issues without providing specific advice on how to deal with problems encountered.

Recommendation: Update the RA Guide to Deal with Permitting Trigger Challenges.

- (ii) Sectoral guidelines could also deal with the types of permitting issues associated with specific project types managed by each department. The difference between sectoral guidelines and the RA Guide would be that the former could identify triggers and reporting requirements for specific classes of projects. This approach may be of more immediate interest to project managers than the Responsible Authority Guideline. If sectoral guidelines were made available on the web, they could be linked with both provincial EA web sites as well as to line Departments to facilitate cross referencing for proponents.

Recommendation: Sectoral Guidelines should be used to address permit issues related to various classes of projects.

- (iii) *The Agency should work with RAs to develop a list of projects requiring permits triggering the Act.* A number of the permit triggers identified by the OMP are exercised at the RA's discretion. This means in some instances, where a proponent identifies appropriate mitigation measures, a permit is not required. For other projects there is a greater degree of certainty that a permit will be required. RAs with permit triggers should work with the Agency to develop these lists. They can then be developed as "exclusion list regulations" within their own Act's structure and/or included in the Responsible Authority Guidelines and any sectoral guidelines developed. Ultimately these list reduce or eliminate the risk of late triggering of the Act by providing a greater deal of certainty to proponents as to which projects invoke the Act's permitting triggers. In addition to this RAs might wish to develop guidelines (or include in sectoral guidelines) conditions under which discretionary projects are referred to the assessment process.

Recommendation: Responsible Authorities should develop "exclusion list regulations" for projects that consistently invoke permitting triggers. They could also develop guidelines with

criteria that help proponents determine conditions under which other projects potentially invoke permit triggers.

"Emergencies" are not defined by the Act for Projects Excluded from Assessment

The OMP identified one case study where the Act may have been inappropriately applied.

- *Case Study 2 (Tree Cutting):* In this study a survey carried out by the RA indicated that a significant number of trees around a runway approach were in violation of the Airport Zoning Regulations (AZR) which imposes strict height restrictions. The funding trigger was used by the project manager to identify a range of mitigation measures for potentially affected land holders with trees in violation.

Since tree cutting is a maintenance activity required by the AZR, most of the "project" costs were related to mitigation measures that were not necessarily the responsibility of the RA. If the funding trigger hadn't been invoked the trees would have been cut down anyway and the potentially impacted parties would have been responsible for implementing any mitigation measures they desired.

The problem here has little to do with the funding trigger per se. Rather it may have to do with Section 7 (1) of the Act, which deals with projects excluded from assessment. Specifically it states that, an EA is not required where:

- (a) the project is described in an exclusion list;
- (b) the project is to be carried out in response to a national emergency for which special temporary measures are being taken under the Emergencies Act; or
- (c) the project is to be carried out in response to an emergency and carrying out the project forthwith is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.

In our opinion, the project manager's decision to proceed with an EA potentially compromised the safety objectives of the AZR. Impacts from tree cutting may have been likely, but justifiable given the public safety objectives of this regulation. Given that the Act does not define "emergency" (clause "c") there was definitely room for some interpretation on the part of the project manager. More importantly this example indicates that there may be a number of projects conducted in the interest of public health and safety or to prevent damage to property or the environment that do not require environmental assessments. These projects do not constitute an emergency and therefore are not addressed by Section 7(1)(c). It is difficult to know the extent to which this problem may be systemic to other departments given the number of case studies developed by the OMP.

The OMP identified two reforms:

- (i) *We would recommend that the Agency work with RAs to identify projects carried out in the interest of preventing property/environmental damage, or meeting public*

health/safety objectives. Projects identified should meet a number of criteria such as the fact that they: (i) are carried out in response to existing regulations such as the AZR, (ii) cause insignificant environmental damage, and (iii) are carried out on a routine basis. Projects meeting these criteria could be placed on the *Exclusion List Regulation*. RAs could then work to identify more appropriate environmental management tools to deal with the impacts of these activities.

Recommendation: Projects routinely carried out in the interest of preventing property / environmental damage, or to meet public health/safety objectives should be placed on the exclusion list.

- (ii) *Secondly, operational policy statements could be used identify criteria and/or classes of projects that constitute emergencies.* Operational policy statement can be developed and updated relatively quickly based upon lessons learned. In our opinion including a definition of “emergency” in the Act can be restrictive since definitions are subject to a range of interpretation and making changes to legislation take time are more costly.

Recommendation: The Agency should develop an operational policy statement that identifies criteria and/or classes of projects that constitute emergencies

5.2.2 Harmonization with Other EA Processes

Section 12 (4) states that, “Where a screening or comprehensive study of a project is to be conducted and a jurisdiction has a responsibility or an authority to conduct an assessment of the environmental effects of the project or any part thereof, the responsible authority may cooperate with that jurisdiction respecting the environmental assessment of the project.” Jurisdiction is defined to include provinces and, to this end, the Agency has negotiated harmonization agreements with a number of them to facilitate this cooperation.

Half of the projects reviewed by the OMP also involved provincial requirements for EA. Surprisingly, few challenges to harmonization were identified by stakeholders. The two identified by the OMP are discussed below:

Bump-up criteria need to be clarified to speed decision related to conducting joint panel reviews with provincial authorities.

Federal projects are only bumped up to a panel review when there is sufficient public concern and/or there are significant effects. Concurrently a project might trigger a provincial EA process that immediately requires a hearing by an independent tribunal. This raises the prospect of having a comprehensive study conclude, after an independent provincial tribunal has been conducted, that a federal panel review is required. Proponents then risk incurring significant project start-up costs in order to obtain federal approval. The OMP identified only one project

where the potential for this problem was identified by both the provincial authority and the proponent:

- *Case Study 17 (Watershed Management Panel):* This project initially underwent a comprehensive study at the federal level while a Board hearing conducted provincially. Eight months passed before the federal RA had enough information to bump up the study to a joint panel review. Costs of this delay were that the proponent (a provincial authority) had less funds available from public coffers to initiate the project. The federal RA suggested that one obstacle to bumping-up the project earlier was that criteria for this are poorly defined in the Act. A decision on bump-up had to wait until evidence was collected to prove that either sufficient public concern had been expressed or that potential project effects were significant.

While the OMP only identified one case study involved this particular challenge to harmonization it is clear that this is a potentially re-occurring issue that needs to be addressed. Bump up criteria are not clearly defined in the Act or the Responsible Authorities Guide. If the proponent had been from the private sector loss in profit might have been quite significant (as was demonstrated in Case Studies 1, 11 and 20).

- *Case Study 19 (Oil Pipeline):* The proponent commented on the fact that reasons for bump-up to the Panel review were not clear. Normally pipelines of this size were only subject to comprehensive study requirements. In the proponents mind requirements for public review put pressures on the schedule for project implementation that they had not anticipated.
- (i) *The federal RA for Case Study 17 suggested that decision criteria for bump-up be more clearly laid out in the Responsible Authorities Guide.* Such a revision could be done with very little effort or cost. The Guide could be revised to provide better direction as to how RA's determine what constitutes *sufficient public concern*. It should provide the RA with measures of sufficiency, provide indicators and address whether or not experience from similar projects in the past can be used as justification for bump-up. Equally criteria to help the RA make an early determination of significant effects should be clearly laid out.

Recommendation: The Agency should clarify decision criteria for bump-up decisions in the RA Guide.

- (ii) *The Provincial Board suggested that provisions for automatic bump-up be made where either federal or provincial processes require a panel review.* Apparently four to five similar reviews are conducted per year for the province in question. The provincial authority considered the costs of these reviews to be manageable (approximately \$100 thousand a piece). In our opinion provisions for automatic bump will require that the Agency has a better understanding of:
 - the conditions under which provincial and federal bumps-up occur (information requirements, decision points). It may be that the province has information that it could share with federal RA's earlier in project planning.
 - the number of provinces for which this situation potentially occurs. Since Alberta was the only province the OMP identified this issue in, is unclear to us how many

provinces have similar Board review process that require harmonization. It may be that the Agency only has to focus on several provinces to deal with this issue.

- whether or not provisions for automatic bump-up will significantly impact the budget available for managing Panel reviews (given existing cost sharing arrangements, etc.).

Recommendation: The Agency should study implications of automatic bump-up.

Provincial Recommendation to the Minister in British Columbia are Made in Confidence while Federal Recommendations are Reviewed Publicly.

The OMP identified one case where the process of harmonization was made difficult by conflicting requirements related to public consultation and recommendations to the Minister.

- *Case Study 11 (Copper Mine):* In British Columbia the EA process involves the public from the early stages of project scoping to the review. According to the provincial authority, once an EA is completed there is no requirement for further public consultation. For this reason the province makes a confidential recommendation to its Minister. In contrast, Section 22 of the Act requires that the federal RA's recommendations are sent out for public review and comment, prior to the Minister making a decision. The provincial authority felt that these differences were one of four factors identified in this case study resulting in significant project start-up delays and costs (approximately \$21 million or 16% of project capital costs).

Both the proponent and the provincial EA authority noted that many of the procedural difficulties in harmonization have since been addressed through harmonization agreements and by the development of various Agency guidelines. It was felt, however, that the issue of public consultation and recommendations to the Minister remained a problem. Neither the federal RA or provincial authority had any suggestions for reform. In our opinion many of the project start-up costs identified in Case Study 11 are attributable to the transition period associated with the enactment of *both* provincial and federal assessment acts.

Further, results of the OMP indicate that proponents can usually plan around a known period of time for review and approval, rather it is *delays* to this period that carries with it the highest risk of project start-up costs. In our opinion this is the real issue for proponents (see Case Studies 1, 11 and 20). Time lines identified in the *Responsible Authority's Guide* subsequent to the approval of the Copper Mine study identify the maximum duration for various stages of review. These provide the RA with a framework for managing potential delays and setting proponent expectations.

Recommendation: The Responsible Authority's Guide should further promote an active role for RAs during the preparation and review of EAs through their:

- Ongoing assistance to proponents during EA scoping and preparation;
- Coordinating the input of other federal and provincial authorities during this period;
- Setting reasonable timelines for each stage of the review; and
- Coordinating feedback to the proponent during review and approval.

Finally, while both provincial and federal processes captured various stakeholders responses to issues raised by the proposed project, only the federal process captured the public acceptability of the final recommendation through public consultation. This is important information for a Minister's office when considering the political ramifications of the final decision. In our opinion the Agency should continue the practice of public consultation during this stage of the review.

Ultimately both Ministers have the authority to approve or disapprove the project with their own separate conditions. There is, therefore, no reason why recommendations have to be contingent on one another. The provincial Minister's office may actually be interested in hearing public comments to federal recommendations prior to making a final decision on their own. Alternatively they may wish to keep the autonomy of their decision separate from the federal one. This inherent flexibility probably serves the needs of both parties and can be managed on a project by project basis. While this may add time from the proponents perspective to the overall period required for EA review and approval, the additional information it provides may speed up the time required for Ministerial approval.

Recommendation: The Agency and the provincial EA authority in B.C. should allow each process to continue on a separate track at the recommendation period.

5.2.3 Determining the Lead RA

The OMP identified two instances where determining the lead RA was difficult. In both cases the Act was flexible enough that project specific resolutions were possible. Recommendations here, therefore, focus on realizing increased efficiencies.

Federal authorities are reluctant to assume Lead RA responsibilities outside their mandate as required by the Act

Section 12. (1) of the Act states that, "Where there are two or more responsible authorities in relation to a project, they shall together determine the manner in which to perform their duties and functions under this Act and the regulations". Unfortunately the *Responsible Authorities Guide* does not always provide clear guidance to resolving responsibilities. Part 1, entitled, *the Managers Guide*, addresses obligations of responsible authorities as well as the roles and responsibilities of participants in the process. It does not deal with resolving super-added responsibilities imposed by the Act on the lead RA. Where these responsibilities go beyond the regulated mandate, RA's are reluctant to take on the risk. In at least one study this resulted in delays related to determining the lead RA.

- *Case Study 17 (Water Diversion):* the lead RA was reluctant to take on fiduciary responsibilities of potentially impacted First Nations. Here, DIAND's mandate includes the health and welfare of First Nations people, but the Act required that the lead RA assume

responsibilities for follow-up as part of the project's EA. Resolving this issue contributed to an 8 month delay prior to bump-up to a Panel review. Since the proponent was a provincial authority impacts of this delay were not reflected in lost profit or construction delays, but in a lack of public funds at the time of project start-up.

While no recommendations were offered by the RA on how to address this issue, it is clearly one, in our opinion, which has the potential to re-occur. The risk here is systemic delays to EA start-up where super added responsibilities carry fiduciary responsibilities that go beyond the RA's mandate. One approach to solving this problem was identified in a pipeline project, not reviewed by the OMP. There, DFO agree to take on NEB's RA responsibilities based on the number of stream crossings involved and the nature of the assessment required (personnel communication: Chief Legal Counsel, NEB)¹⁵. In other words a *determination of lead RA was made based on the nature of the anticipated impacts of the project and the role of the regulators in follow-up*.

Recommendation: The Agency should investigate the merits of ensuring that follow-up activities fall to those department's with mandated responsibilities for managing certain impacts rather than the lead RA. Super added responsibilities could be used to focus on areas for which there was no clear federal jurisdiction. These super added responsibilities could then be clearly outlined in the *Manager Guidelines*.

Project jurisdiction is not always clear for the RA's involved

In at least one project reviewed under the OMP, jurisdiction over the project was not clear.

- **Case Study 5 (CO₂ Pipeline):** A project of this nature had never been undertaken in Canada. The proponent was, therefore, asked by the NEB and Transport Canada to choose which RA it wanted. Subsequent revisions to the NEB Act have resolved this uncertainty by placing high pressure CO₂ pipelines within its mandate to review. This eliminated any further uncertainty with regard to this class of project.

In the above example, while there was some uncertainty as to who would become the RA, there were no significant delays and both federal departments worked quickly to provide a solution. It is likely, however, that over time new classes of projects will be identified.

Recommendation: The Agency may wish to provide some sort of early warning system that helps RAs resolve responsibilities related to new classes of projects. More specifically, the Agency may wish to act as a facilitator in these instances to help departments resolve any uncertainties.

¹⁵ Note: this project was not reviewed by the OMP project, but was referred to during an interview.

5.2.4 Determining the Project Scope

Sometimes RAs focus on their departmental mandate during scoping rather than taking on super-added responsibilities required by the Act

Once a department triggers the Act, an RA takes on a range of responsibilities and potential costs in relation to the EA that can go well beyond their mandated responsibilities. The requirement for all assessments to consider the "environmental effects" of a project (Section 16 (1) of the Act) means that the RA must consider:

(a) any change that the project may cause in the environment, including any effect of any such change on health and socioeconomic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and

(b) any change to the project that may be caused by the environment

The OMP identified one case study in which super-added responsibilities may not have been taken on fully by the RA.

- *Case Study 15 (Seasonal Road):* The EA focused on the RA's mandated responsibilities; potentially at the expense of examining a broader range of impacts (no terrestrial field studies were conducted). While neither the proponent nor the RA raised this as an issue, the consultant identified gaps in the baseline study. Given the size of this project (\$11.6 million), the total budget of the EA (approximately \$0.5 million or 4% of project capital costs) and the fact that it was conducted at the level of a comprehensive study, omission of terrestrial baseline data is considered significant.

A second instance provides an example which is not quite as clear.

- *Case Study 6 (Water Pipeline):* In this project the EA was used to focus on social impacts of the pipeline, considered to be an imperative by the RA. Direct comparison with Case Study 15 is complicated by the fact that this project was conducted overseas and was conducted at the level of a screening. Since little biophysical evidence was presented or required by the RA in the assessment it is more difficult to state with complete certainty whether or not super-added responsibilities were met. In our opinion better documentation in the screening report would have provided stronger justification for the approach adopted by the RA.

As a general observation public sector EA's were used first and foremost to reflect mandated responsibilities. There may, in fact, be some justification for this given the nature of the projects that these departments pursue. The risk, as demonstrated by the two case studies above, is that scope of the assessment did not properly reflect the super-added responsibilities imposed by the Act.

- (i) *RA's with socio-economic development mandates emphasize the role of risk assessment and social impacts in EA's.*

Both NEB and CIDA have development goals, albeit in different contexts – one infrastructural and national, the other socio-economic and international. In the case studies reviewed by the OMP results indicated that:

- NEB placed more emphasis than other RA's interviewed on risk assessment since their concern was with the structural integrity of projects being built (i.e. pipelines) and potential risks to public safety.
- CIDA placed greater emphasis on socio-economic impact assessment than on biophysical, reflecting their commitment to meeting people's basic needs in poorer countries.

In both instances there was a shift away from environmental impacts unrelated to infrastructural risks and public health/safety.

- (ii) *RA's with natural resource management or environmental mandates emphasize the role of biophysical impacts in EA's.*

- Environment Canada tended to focus on the management of biophysical impacts.
- DIAND also tends to do this in addition to socio-economic impacts, reflecting the high value placed by First Nation peoples on the environment.

Unlike the NEB and CIDA there was little evidence of risk or socio-economic impact assessment in the case studies developed.

Clearly each department brings certain skills to the assessment field, however RA project managers were almost unanimous in their desire for the development of sectoral guidelines to provide clearer direction (Recommendation 1).

Recommendation: Sectoral guidelines could be used to help address super-added responsibilities. These will be particularly important at the screening level where assessments can be conducted with little input from other federal authorities.

Recommendation: At the comprehensive study level it will be important for the Agency to play a stronger role at scoping to ensure that super added responsibilities are met.

Given the nature, scope and size of most panel reviews we do not anticipate meeting super-added responsibilities to be a problem. The rationale for sectoral guidelines is further strengthened by issues raised in this report with regard to scoping (Section 5.2.4) and EA report preparation (Section 5.2.6).

There is no requirement to examine relevant environmental legislation during scoping.

The Act very clearly states that determining both the project scope as well as the range of factors to be considered in the assessment (environmental effects, mitigation measures, etc.) are the RA's responsibility – see Sections 15(1)(a) and 16(3) of the Act. Most experienced EA experts carry out a review of environmental legislation relevant to a project's implementation as one of the first steps of conducting an EA. This provides greater certainty with regard to: the scope of work to be carried out in the assessment, the number of federal and provincial authorities that need to be consulted during the process, as well as with regard to regulatory/ EA approval. The earlier this is done in project planning the more likely it is that the RA/proponent will identify potentially conflicting regulatory requirements, resolve them and/or consider alternatives that avoid the conflict. It is also an important step for the RA since it can be used to identify super added responsibilities as well as the various departments and ministries the project will have to be coordinated with.

While this is generally considered “good practice” in the EA community, there is no provision in the Act that requires the RA to scope relevant environmental legislation, regulations, and guidelines that provide the policy context in which the project is being implemented. As a result review of assessments sometimes identifies policies that contradict the project's stated objectives.

- *Case Study 1 (Building):* The proponent choice of location, was limited by early policy decisions that resulted in the selection of the building's present site. If the RA had reviewed relevant environmental policies, the need for site alternatives might have been identified earlier. Alternatively the RA, rather than the proponent, could have defended its choice of site. Instead the EA process led to bad publicity, a potential conflict with the newly enacted *Federal Wetlands Policy* and ultimately significant project start-up costs from delays valued at 5.6% of the projects total capital costs.

Recommendation: In our opinion the *Practitioner's Guide* would be strengthened if it directed the RA/proponent to examine relevant environmental policies and integrate findings and/or requirements with the scope of the project and (environmental) factors to be considered. Sectoral guidelines could be used promote this practice. They could be further refined to present specific lists for different classes of project.

Participation of all stakeholders in scoping reduced project start-up delays.

Generally RA's appear to be taking an active role in scoping for the projects reviewed by the OMP.

- In a number of case studies (4, 12, 13 and 15) committees were formed with federal/provincial authorities providing input. Providing the proponent with a single window for communication streamlined the assessment process and provided for better communication between the various authorities involved.

- Sometimes the extent of consultation went beyond federal/provincial authorities. In Case Study 11 (Copper Mine) project scoping at the provincial level also involved consultation with public interest groups and the First Nations.
- *Case Study 3 (Golf Course)*: The RA provided ongoing assistance during scoping as well as during preparation of the assessment. This resulted in a refinement of the study as it progressed and meant that there were no delays during review and approval.

The OMP identified at least three case studies where delays at project review and approval could be linked to the absence of either the RA or other federal authorities at scoping.

- *Case Study 1 (Building)*: Late triggering of the Act resulted in a re-scoping of the proponent's assessment and delays to project start-up.
- *Case Study 14 (Base Decommissioning)*: lack of consultation during scoping led to requests for additional information during review and approval.
- *Case Study 5 (CO₂ Pipeline)*: In this instance the RA was a quasi-judicial board which could not function in the same capacity as other departments to coordinate input from other federal and provincial jurisdictions during the preparation of the EA. While there were no delays or cost impacts to the proponent, the lack of feedback from the lead RA was a source of uncertainty for the proponent.

Clearly proponents benefit from RA involvement at scoping. In our opinion the Responsible Authority Guidelines do not stress the importance of this role enough.

Recommendation: The Responsible Authority Guidelines need to specify the types of support the RA should provide to proponents during scoping. They need to emphasize that this is an iterative process that happens during the preparation of the assessment. Guidelines and operational policy statements should encourage RA's to consult with a broad range of stakeholders during project scoping and to continue this role, where feasible, during the preparation of the assessment.

The basis for linking two projects with one EA has to be made clearer to avoid challenges

The OMP identified at least two reasons why RA's linked two projects under the same review process.

- (i) According to the Section 15(2) of the Act, projects may be so closely related that they can be considered to form a single project. Over time reasons for linking the project have included the potential for these projects to cause cumulative effects.

- (ii) The second reason appears to be to realize procedural efficiencies where two projects requiring public reviews are closely linked in time and space that both the responsible authorities and the proponent can realize cost savings.

What is confusing to some stakeholders interviewed is that there appears to be no link between these two rationales. In other words, two projects that are physically linked may have separate EA reviews in recognition of time constraints to project implementation. Since there is no public statement required from the RA as to why the two projects do not have cumulative effects, the result is that public interest groups feel that RAs and the proponents are avoiding dealing with cumulative effects as required by the Act. Not only does this reduce the credibility of the EA process for some stakeholders but it can raise the potential for lawsuits as was acknowledged by the proponent in Case Study 5 (CO₂ Pipeline).

Case Study 5 (CO₂ pipeline) is the perfect counterpoint to Case Study 17 (Offshore Drilling and Natural Gas Pipeline) to illustrate this problem. In both instances the pipelines being assessed are functionally linked to downstream or upstream projects respectively. In the first instance, however, NEB decided to evaluate the pipeline on its own, while in the second the pipeline was evaluated with the offshore drilling project under a Joint Panel Review. Presumably in the first instance there were no procedural efficiencies that could be realized by either the NEB or the proponents involved, while in the second there were. At least one public interest groups challenged the CO₂ decision based on the potential for cumulative effects between the linked projects. To avoid challenges, the NEB could have presented reasons why the potential for cumulative effects between the CO₂ pipeline and the downstream project were negligible.

Recommendation: The Responsible Authority Guidelines should require that RA's provide a clear written statement at scoping as to why two projects are or are not linked. This statement should address the potential for cumulative effects as well as cost savings from procedural efficiencies. While this is a minor point of clarification for the guide, it will improve the credibility of the process for some stakeholders and may even reduce potential court challenges.

The Act's definition of "Project" does not capture early decisions related to scoping

According to Section 2 of the Act, "project" means:

- (a) in relation to a physical work, any proposed construction, operation, modification, decommissioning, abandonment or other undertaking in relation to that physical work, or
- (b) any proposed physical activity not relating to a physical work that is prescribed or is within a class of physical activities that is prescribed pursuant to regulations made under paragraph 59(b).

Unfortunately this definition does not capture a number of decisions made in the early stages of project scoping which the EA tries to influence. The OMP identified one example where the assessment process was triggered long after a number of irrevocable decisions were made. This resulted in discrediting the process for some stakeholders, even though the quality of the screening conducted was exceptional.

- *Case Study 1 (Building):* Years prior to initiating the assessment, the RA carried out a site selection process for the proposed building. Once the site was chosen an EA was implemented. The screening, however, revealed a potential conflict between municipal zoning information used to select the site, and the new Federal Wetlands Policy. During public consultation a number of stakeholders requested that alternative sites be investigated. The RA was not able to exercise this discretionary power under the Act for several reasons. The first was that the site selection process carried out several years earlier had resulted in a political commitment to the site. The second was that the RA would have likely incurred a lawsuit from the proponent would have commissioned architectural studies for the site and hired contractors to do preliminary site work. In other words irrevocable decisions had already been made.

The problem appears to be that RA's and proponents begin to think about assessment once a project had been identified. This ignores important decisions made leading to its conceptualization.

Since assessments work from broad based principles to the specific there are many environmental considerations that can effect early stages of project planning. Given the time lines required for an EA's development, RA's and proponents may be wary of "triggering" the Act when they are still in the early stages of design. To address this concern, the Agency could officially acknowledge a "pre-scoping" phase where consultations are carried out with the RA as well as the Agency. One potential model for this was identified at the provincial level in Case Study 11 (Copper Mine). Here the provincial EA ministry helps the proponent to resolve a range of potential issues and concerns at the conceptual stages of project design, before it officially enters the assessment track.

Recommendation: To avoid this problem the Agency needs to emphasize the link between early stages of a project's conceptualization and EA scoping decisions. This should be done by acknowledging a "pre-scoping phase" in the Responsible Authority's Guide (as well as in any sectoral guidelines developed) and identifying roles and responsibilities for the RA and the Agency during this period.

Innovative Approaches for Managing Cumulative Effects need to be Documented

Section 16 (1)(a) of the Act requires consideration of environmental effects including cumulative effects as part of the assessment. Approaches to identifying and managing cumulative effects are still developing. The OMP study identified several case studies where the concept of cumulative effects had an impact on project scoping as well as review and approval. Innovative approaches for managing these effects need to be documented so that lessons learned can be passed along to other RAs and proponents. Ultimately this will improve both the quality of assessments carried out as well as the range of potential outcome benefits.

- *Case Study 4 (Food Park):* the "project" entailed the development of a food park to house a number of industries. Not all industries had been identified at the time of project scoping or

approval. Thus the true nature of cumulative effects could not have been established until all industries were located. Instead of holding up project implementation, the EA was used to establish effects, mitigation measures and a follow-up program to monitoring results. This information will be used by regulators to approve/manage subsequent tenants at the food park.

- *Case Study 18 (Oil Pipeline):* Here the Panel applied a three part test to determine what evidence might be relevant to the issue of cumulative effects. Briefly this test required the following:
 - (i) First there must be an environmental effect of the project being assessed.
 - (ii) Second, that environmental effect must be demonstrated to operate in conjunction with the environmental effects from other projects or activities.
 - (iii) Third it must be known that these other projects or activities have been or will be carried out and are not hypothetical.

While these criteria were challenged (and upheld) in court, follow-up activities initiated by the proponent may bear out their value.

RAs, proponents and NGOs all felt clearer that a clearer definition of cumulative effects and how they can be studied and mitigated is required. The Agency has just finished producing the *Reference Guide Addressing Cumulative Environmental Effect* as well as an operational policy statement *Addressing Cumulative Environmental Effects Under The Canadian Environmental Assessment Act*. Both documents address some of these concerns. In our opinion sectoral guidelines will provide more relevant information to all stakeholders. They are also documents to capture examples of best practice relevant to each sector.

Recommendation: Sectoral EA guidelines should be used to identify examples of cumulative effects for various classes of projects. They should also be used to capture the industries experience with best practice.

5.2.5 Delegation of Roles & Responsibilities During The EA

At the federal level conducting an environmental assessment is the RA's responsibility. Section 5 of the Act requires an environmental assessment of a project before a federal authority performs a range of duties in relation to a project. Further, Section 17(1) allows the authority to delegate a number of responsibilities in relation to the *preparation* of screening reports and comprehensive studies to any person, body or jurisdiction. Scoping, EA approval and follow-up however, remain the sole responsibility of the RA. Just how these responsibilities are interpreted by the RA affects the implementation of the Act and therefore a range of costs and benefits.

The Concept of Self Assessment Requires Further Clarification At All Levels of Assessment

Section 5(2) of the Act requires an EA when federal authorities carry out a project, make land available for a project or contributes funds. This responsibility is embodied in the concept of self assessment which is further described the Responsible Authority Guidelines and is considered one of the cornerstones of the Act.

How an RA interprets the concept of self assessment affects the relationship between the proponent and the RA. The latter is far more likely to lend assistance throughout the EA process if the end product is perceived to belong to the RA's department. OMP results indicate that, in instances where RA's worked cooperatively with the proponent during the EA preparation period, first drafts were often accepted with minor revisions (see Case Studies 3 and 4). In other words, *RA support during EA report preparation minimized delays at approval*. In fact most proponents interviewed supported the notion of RA's playing an active ongoing role during EA report preparation. They felt this would allow them to work with the RA to continuously scope the assessment and identify information gaps prior to the review and approval stage. In case studies where RA's did not provide ongoing assistance there was an increased risk of project start-up delays:

- *Case Study 12 (Mine Decommissioning)*: While the RA formed a committee of federal and provincial authorities during project scoping, this group did not play an active role with the proponent during the assessments preparation. Debates over the appropriateness of proposed mitigation measures during the review and approval stage resulted in a 6 month delay cost the proponent an estimated \$93,750 in additional site maintenance.

Only one RA project manager interviewed (Case Study 10) explicitly stated that his department was legally responsible for assessing the environmental impacts of the proposed project. While the OMP did not specifically collect information on the RA's understanding of self assessment, we feel that variations in the delegation of EA responsibilities observed may reflect a range of interpretations.

In our view self assessment would be further strengthened through two measures:

- (i) Self assessments needs clarification further clarification at all three levels of assessment. In our view the concept of self assessment is most easily interpreted at the level of screenings, which are conducted internally by most departments. Federal and provincial authorities may be solicited where the RA deems this necessary. As one RA interviewed noted, however, comprehensive studies and Panels require the additional approval of the Minister of Environment. This allows both the Agency, as well as other federal authorities, to exert more control over the process determining both the scope of the EA as well as conditions for approval. At these levels of assessment the implications of self assessment are less clear. The problem is further complicated in for NEB boards which operate at arms length from proponents as well as from other RA's during the EA's scoping, preparation and review (see the following sub-section).

Recommendation: The concept of self assessment requires clarification and linking to delegation of RA responsibilities and super added responsibilities taken on by the RA for all three levels of EA. Not only are revisions required to the *Responsible Authorities Guide* but Sectoral Guides (if they are developed) and training exercises would be other important areas to bring forward this concept.

- (ii) Delegation of RA responsibilities are more likely to reflect the concept of self assessment if departmental resources are increased to meet super-added responsibilities. At least one RA interviewed (Case Study 12: Mining Decommissioning) indicated that departmental resources were spread quite thin. He went on to state that if project managers are to play a more active role, additional departmental resources would be required. In Case Study 10 (Phosphate Mine) proponents complained that EA completion was slowed by the fact that the RA assigned junior staff to manage the process. This example further provides further evidence for the limited resources available to departments.

Recommendation: The Agency needs to work with Departments to identify super-added responsibilities required by the Act and to identify the types and levels of departmental resources required to avoid delays associated with project start-up.

The NEB, As A Quasi Judicial Board, Cannot Delegate Responsibilities In The Same Manner As Departmental RAs

The OMP reviewed three case studies involving the NEB. As a quasi-judicial body, rules of natural justice prevent NEB Boards from reviewing draft EA documents and discussing their contents with proponents without sharing the document's contents with all stakeholders for discussion. While the OMP did not identify any costs associated with this issue it is a source of concern. Not only does this raise issues of practicality with regard to the time required to prepare the assessment, but it also challenges the ability of these tribunals to act as an RA who, according to the Act, is responsible for conducting the EA. This was especially a point of concern for the proponent in Case Studies 5 (CO₂ Pipeline) since it introduced uncertainty with regard to the scope of the EA early in its development. This issue is addressed further in Section 5.2.7 of this report.

The Act does not require that delegation of EA responsibilities be based on environmental / assessment expertise

Neither the Act, guidelines or operational policy statements require that an EA be managed and conducted by experts with knowledge of the assessment process. The OMP identified two screenings where the actual *development* of the EA was conducted by individuals with little or no experience in assessment.

- *Case Study 2 (Tree Clearing):* The project manager took primary responsibility for conducting the assessment with some advice from a departmental adviser. Neither had any

practical experience in conducting assessments or in the environmental sciences. As a result the EA was not properly scoped and the quality of the assessment report was lower than it should have been. Two additional runways were surveyed and were also found to require tree cutting. The proponent will have to initiate a second assessment, requiring additional consultation activities, travel, etc. that could have been included in the first assessment.

- *Case Study 6 (Water Pipeline):* In this international project, the NGO responsible for the project had no internal environmental/assessment expertise. While the RA has adopted a long term approach to developing this expertise in Executing Agencies like the NGO, the resulting screening document was weak.

In addition, study costs incurred by the proponent in a third case study might have been avoided if the RA manager had more assessment expertise:

- *Case Study 1 (Building):* Arguably the RA's decision to re-scope the proponent's assessment might not have been made if the project manager had more EA expertise. Resulting project start-up costs were significant for the proponent.

OMP results indicate that better scoping decisions were made when either the RA, the proponent, or both had environmental assessment expertise.

- *Case Study 3 (Golf Course):* The fact that the RA worked consistently with the proponent to refine the scope of the assessment during the course of EA implementation avoided requests for additional information at the review and approval stage.
- *Case Study 7 (Transmission Line):* Even though the RA was absent, the proponent's consultant had enough experience to conduct a thorough scoping of project issues during EA start-up. This was acknowledged by the RA as being a contributing factor to the success of the EA.

While most departments have in-house experts, the extent to which they are engaged in the assessment process varies. We feel that if the Responsible Authority Guidelines officially recognize the need for this type of expertise in the development of an EA it will better address those instances where the appropriate individuals are not consulted. The development of sectoral guidelines will also help address some of these problems.

Recommendation: The Responsible Authority Guide should specifically require that persons with assessment expertise be involved in scoping decisions as well as other aspects of the EA's preparation and review. This should also be emphasized during training sessions with project managers.

5.2.6 Preparing the EA Report

The OMP identified a number of issues centered around the role of the assessment in project planning.

Project managers may make interpretations, as to the role of the EA in project planning, that are at odds with the Agency's

Section 16 (1) and (2) lay out basic information requirements for environmental assessments conducted. These are further interpreted in the *Practitioner's Guide* where the Agency explains the relationship between various elements of the assessment (i.e. environmental effects, mitigation measures). Despite this documentation OMP results indicate that there is ample room for interpretation of information requirements for all three levels of assessment:

Proponents in Case Study 18 (Oil Pipeline Panel) and Case Study 14 (Seasonal Road Comprehensive Study) used assessments to establish guidelines for project implementation rather than collecting detailed biophysical data on every aspect of the route. This approach allows for environmental monitors to identify and manage unforeseen impacts encountered in the field. In both instances, however, a number of stakeholders raised concerns with regard to the level of information presented in the assessment, the impacts predicted and the links to proposed mitigation measures. In their opinion the EAs did not provide "adequate" information upon which to base a recommendation. Adequate information would entail presenting information in the assessment on environmental effects, linking this information to mitigation measures, and actions taken during follow-up to ensure their effectiveness. This provides a clear basis from which the environmental monitor works while the project is being implemented. Lack of clear direction in existing guidelines led to court challenges in Case Study 18 and bad press for the proponent.

Recommendation: The Agency needs to play a stronger role in ensuring that these information requirements as required by Section 16 of the Act and elaborated on in the *Responsible Authority's Guide* are met by proponents at the comprehensive study level and (to a lesser extent) in panel reviews. This could be done by detailing requirements at scoping, providing ongoing assistance to proponents during preparation of the assessment and by providing feedback on these issues to proponents during the review.

Similarly Case Study 6 (Water Pipeline Screening) raised documentation issues for the OMP consultants. The RA felt that screenings for projects of this size could not feasibly involve extensive biophysical studies of project impacts. Instead the screening form was used to indicate whether or not various types of impacts had been identified as a concern; as well as to document the RA's decision with regard to project implementation. The problem here was that the screening form did not provide enough information for verification. Since the proponent did not have any environmental expertise and the RA's EA expert had not visited the site the reader is left with little information to support claims made in the report.

Recommendation: The Responsible Authority Guide should be revised to better reflect the rational for reporting requirements at all three levels of assessment. In other words when does a proponent have to collect information on biophysical effects? How is this information linked to determining the significance of effects? What links should the assessment make between effects, mitigation measures and proposed follow-up measures? The Guide should also distinguish between reporting requirements for small versus large screenings and provide decision criteria for determining which is which.

Section 16 Artificially Divides Requirements for Screenings and Comprehensive Studies

Section 16 (1) and (2) of the Act divides study requirements between those required for screenings versus comprehensive studies and panels respectively. OMP findings indicate that these distinctions were not always used or helpful to proponents.

- In many cases large screenings were conducted with the same rigor as comprehensive studies. Consultants hired by proponents in Case Studies 5, 7 and 10 chose the comprehensive study approach as the default model to conduct their analysis. In their experience defaulting to the most rigorous set of requirements avoided potential project start-up delays which were always more expensive for their clients.
- At the screening level, proponents of linear developments (pipelines, transmission lines, etc.) almost always consider route alternatives as a matter of good practice (Screenings 5 and 7). Consideration of alternatives is not a requirement at the screening level.
- At the comprehensive study level the requirement to consider alternatives confused proponents in *Case Study 14 (Base Decommissioning)* and *Case Study 12 (Mine Decommissioning)*: In the latter example the RA was unable to provide any meaningful alternatives for how to implement base decommissioning activities;

While the OMP did not identify any costs associated with this issue, the above examples reflect the potential for a broad range of interpretation. Depending on the RAs understanding of a project and its impacts, available resources to provide support a proponent, etc. resulting EAs could meet the needs of the Act without really addressing the issues raised by the project. Suggested reforms include:

- (i) Taking some projects off the *Comprehensive Study List Regulation*: The RA in Case Study 14 suggested a screening study might have been a more appropriate level of assessment since the requirement for examining alternatives could not be meaningfully addressed in the context of a decommissioning project. Clearly, however, additional input provided by other federal authorities resulted in a stronger assessment in this project. In our opinion if the proponent in Case Study 14 had only been required to carry out a screening both the rigor of the review as well as the range of mitigation measures identified would have been compromised.

- (ii) Using sectoral guidelines to address information requirements of specific classes of projects. Proponents and RAs both felt that sectoral guidelines would be better suited to address the needs for various classes of projects. Among other things, they could provide advice on what type of alternatives are relevant to specific classes of projects. In our opinion this is the preferred option since it avoids having to make legislative changes to the Act or the Responsible Authorities Guide.

Using information generated from previous EA's significantly reduced EA costs

The *Practitioners Guide* encourages the use of previous EAs where applicable to assist in describing the projects environment. Substantial cost savings were realized in at least two case studies as a result of proponents being able to draw-upon the findings of previous EA's.

- *Case Study 12 (Mine Decommissioning)*: As a result of a panel conducted under EARPGO in the same watershed on similar mining operations the proponent was able to carry out a comprehensive study which focused on tailings management rather than a host of other issues surrounding the long term management and monitoring of uranium tailings.
- *Case Study 20 (Offshore Oil)*: The proponent was able to rely heavily on the Hibernia EA for baseline environmental and socio-economic data. The cost savings of not having to develop a full set of baseline studies approximate \$10 million or more.

Recommendation: Over the long term an increasingly large number of proponents may be able realize EA cost savings if the Agency:

- works with RAs and Environment Canada to identify ways of capturing the information generate by various EA's. Sectoral/geographic databases could be developed and made accessible on the net. Examples of this already exist in several parts of Canada (Ontario's Moose River Basin Study and B.C.s Frazer River Basin Study);
- promotes the concept of class EAs with the role of follow-up activities for verification.

5.2.7 EA Review & Approval

The OMP identified several issues related to the EA review and approval stage of the Act. These related to:

- The ability of the NEB, as a quasi judicial board, to act as a traditional RA;
- Risks associated with ensuring continued federal involvement in joint panels where conditional approval is given;
- Potentially unnecessary overhead costs incurred by proponents during EA review and approval of decommissioning studies; and
- Inappropriate policy issues being raised during Panel reviews.

These are discussed further below.

NEB, as a quasi-judicial board, does not run Joint Panels as they were traditionally conceived resulting in a litigious process that intimidates some stakeholders and potentially compromises their representation.

Originally the idea of Joint/Substitute Panels was proposed in an attempt to reduce the time required for review and approval of projects triggering more than one EA requirement. While the rationale for this is clear for harmonizing federal and provincial EA requirements, it is less clear when applied to quasi-judicial boards conducted by NEB. The OMP identified two issues in this regard:

- (i) NEB boards have to observe rules of natural justice. These include requirements for:
 - a public review;
 - any draft EA documentation submitted to the Board be made available to all other stakeholders (in other words the Board cannot act as an RA to provide feedback during the preparation of the assessment); and
 - that stakeholders have an opportunity to challenge this evidence under cross examination.

While the requirement for a public review is certainly compatible with the Act, the other points are probably not. For instance, the requirement to make any document available to other stakeholders restricts the ability of the proponent to consult with the NEB while developing the assessment. This is an important role of the RA which helps to reduce/eliminate potential requests for additional information during the review and approval stage. Also, the opportunity to cross examine evidence by stakeholders results in a litigious process described as either confrontational, costly or both to many participants interviewed by the OMP. It was also described as potentially restrictive. Not only were some RA's uncertain as to how to participate in during the hearings because of the legal procedures in place (Case Study 18), but some NGO's did not feel they had proper representation since participant funding was often insufficient to cover legal costs for the entire period of the review (Case Study 17, 18 and 19). One of the strengths of reviews is that they are informal yet structured assessments that provide maximum opportunities for public input and result in independent advice to government departments prior to project approval.

- (ii) NEB joint panels run in parallel with approval procedures. In theory federal EAs result in a recommendation to the Minister. They are one of several pieces of evidence taken under consideration for project approval. The NEB Act also requires the consideration of a projects environmental impacts. The inference here is that an assessment is completed and approved as a piece of evidence prior to their submission at the hearings. The fact that NEB Joint Panel members help to develop a Panel EA Report *at the same time* as drawing up recommendations for their decision means:
 - they have helped to develop a piece of evidence upon which they are going to pass judgement.

- that there is no time allocated for the NEB to review the Panel Report as a piece of evidence in its approval process.

Both aspects raised concerns for NGO's participating in the hearings conducted for Case Study 18. They questioned the ability of joint panels (involving tribunals) to make *disinterested recommendations*. The fact that independent tribunals end up making recommendations to themselves in joint panels further reduces the perceived credibility of the Panel's recommendations. Proponents in Case Study 19 (Oil Pipeline) also formally expressed concerns over this disjunction in process noting in a written statement that it was unusual for the Board to make recommendations to itself.

In contrast to the NEB, the Canada-Newfoundland Offshore Petroleum Board chose to run an independent panel prior to its hearing (Case Study 20 – Offshore Oil). The Panel resulted in a recommendation that was submitted as piece of evidence to the Board. Not only did this allow the Panel to function as an RA, but no concerns were voiced with regard the review procedure. Dividing RA functions from Board functions appears to have merits that even members of the NEB acknowledge require further consideration.

Three suggestions for reform were made by stakeholders:

- (i) *Create a hybrid of both the Act and the NEB process to take advantage of the strengths of both processes* Many proponents interviewed (Case Study 5, 10, 12, 17 and 19) acknowledged that while legal costs were high for NEB panels benefits included:

- A screening of issues to be presented during the review process – this reduces time associated with presentations beyond the mandate of the Panel.
- A more transparent basis for intervenor funding.
- A thorough cross examination of legal issues.
- The requirement that participants substantiate claims made with evidence (proponents felt that in Panels they were sometimes put in the position of having to defend wild unsubstantiated claims from the public).

Probably the biggest benefit is that most proponents felt that the independent tribunals kept the review process on track to meet deadlines, thereby reducing the risk of unnecessary project start-up costs being incurred. We note here that the Agency has just completed a review of Panel procedures which may address many of these concerns. Also a hybrid process ignores the procedural issues raised above. In the final analysis we do not believe that this an advisable option since it does not address issues of natural justice discussed above.

- (ii) *Allow another department to take over the NEB's functions as an RA so that it can focus on its quasi-judicial responsibilities:* There are a least two problems with this proposed reform. The NEB, like any other department, has developed institutional knowledge and experience that it can bring to bear on the review of assessments within its mandate. Moving RA functions to another department would ignore the internal capacity and resources NEB already has available for this purpose and force another department to

develop. Secondly, at the screening level all RA's ultimately make recommendations to themselves for project approval. The only difference here is that separate offices (one bureaucratic, the other political) are put in charge of making EA recommendations and making project approval decisions respectively. For these reasons we do not believe this to be a viable option.

- (iii) *Create a separate unit within the NEB that perform the full range of RA functions required by the Act:* In our view while this seems to be the most viable option. It is also one that is supported by at least some of the NEB officials interviewed by the OMP. The strength of this approach is that it draws upon NEB's internal capacity, while allowing taking advantage of all the benefits currently provided by the Act. Further work has to be done to acknowledge the context in which larger energy policy issues impact upon project approval within the Board prior to identifying a specific process.

Recommendation: The NEB should set up a separate division within the Board to take on the full functions of RA's as intended under the Act.

Conditional Approval With Joint Panels Does Not Ensure Continued Federal Involvement

The OMP identified one instance where the conditional approval of a joint provincial/federal panel did not ensure continued federal oversight.

- *Case Study 17 (Watershed Management):* Here a joint panel approved the implementation of 3 out of 4 project components. This approval was conditional on completing studies related to the fourth component as well as the development of a plan for the entire watershed. All of this hinged on the notion of cumulative effects under the Act. Once approval was given by the joint panel, however, no mechanism existed to ensure federal input to the final project approval.

This might have been considered a serious process issue by some stakeholders if the project had not involved a provincial proponent engaged in a natural resource management project. As it was, approval allowed the proponent to initiate a number of project activities in parallel with further EA studies. At the time of the OMP interviews neither federal nor provincial authorities had identified an appropriate mechanism to deal with this issue.

While no costs were identified with this particular problem we feel RA's are potentially at risk where conditional approval does not provide for continual oversight. Super added responsibilities under the Act might open the RA to incurring liabilities for which it has no control.

Recommendation: Memorandums of Understanding (MOU) for joint panels should include provisions for conditional approval with the caveat that they only be made under conditions where the RA is provided with an opportunity to maintain some level of oversight until the

conditions are met. Super-added responsibilities under the Act could be used as one way of justifying this oversight to the proponent under conditions for approval.

Proponents potentially accrue unnecessary site maintenance risks/costs prior to EA approval

Section 5 of the Act requires that an RA complete an assessment prior to the granting of a license, release of funds or the initiation of a project. The OMP, however, identified two case studies where proponents claimed to have incurred unnecessary site maintenance risks/costs prior to EA approval.

- *Case Study 12 (Mine Decommissioning):* In this instance the proponent was permitted to continue a number of pre-decommissioning shutdown activities while EA studies were underway including, asset recovery and tailings area preparation works. Activities disallowed by the RA were clearly linked to the decommissioning of the mine.
- *Case Study 14 (Base Decommissioning):* the proponent had concerns about occupancy of the site by the homeless and felt that demolition of some of the buildings could have been carried out without violating the spirit of the assessment. In this instance decommissioning of the buildings were not allowed as they were seen to be linked to the “project”.

In both instances minor costs were incurred by the proponents relative to total project capital costs. This being said, in both instances the RA’s used their discretion to interpret what activities were permissible during EA report preparation and approval. In our opinion this practice should be promoted by the Agency for decommissioning projects.

Recommendation: The Responsible Authority Guidelines should be revised to provide RA’s with criteria that help guide them in determining what type of project activities could be implemented by proponents during the preparation of decommissioning EAs.

There is No Mechanism for Diverting Policy Issues from Reviews of Project EAs

According to some proponents and RA’s interviewed by the OMP, challenges to government policies slow down Panel hearings and put the project implementation schedule at risk. Since there is no mechanism to proactively deal with these issues during hearings:

- Proponents can feel that they are being put on trial for government policy and are concerned that debate of these issues will slow down the review process; and
- Public interest groups feel that their concerns are not being addressed.

It is likely that both members of the public and proponents would welcome the opportunity to constructively divert these issues from Panel proceedings if a viable alternative were proposed. Three reforms are proposed here:

Recommendation: The Agency should act to ensure that Panel Chairpersons are better trained to prevent discussions on policy issues outside their terms of reference during panel reviews.

Recommendation: The Responsible Authority's Guide should be revised to require RA's to formally document the policy boundaries of the project in comprehensive studies for the Minister of Environment to do the same at the level of panel reviews. These will help a wide range of stakeholders understand what decisions that have led to the present consideration of the project and demonstrate how this decisions define the project scope (range of alternatives possible, options to be considered, etc.) This piece should be made available to the proponent and the public at EA scoping.

Recommendation: Panels could flag policy issues raised outside their terms of reference. When this happens the Agency could identify whether or not they (i) dealt with environmental regulations or policies, and (ii) whether or not a cabinet decision had been made or if public consultation had been carried out. This refined list of policy issues could then be sent to the Commissioner of Environment and Sustainable Development for further consideration.

5.2.8 Follow-Up Activities

Under section 38 of the Act, a follow-up program verifies the accuracy of the EA and/or determines the effectiveness of any mitigation measures that have been implemented. It also requires that the RA notify the public of the results. In a screening, the RA must consider whether a follow-up program is appropriate only when it has determined that it may provide federal support for the project. A comprehensive study, mediation, or panel review, on the other hand, must explicitly address the need for and requirements of a follow-up program during the assessment.

The OMP methodology was designed to identify whether or not a follow up program was required and why. The *Responsible Authority's Guide* sets out the conditions when a follow-up program is required. They include when:

- the project involves a new or unproven technology;
- the project involves new or unproven mitigation measures;
- an otherwise familiar or routine project is proposed for a new or unfamiliar environmental setting;
- the assessment's analysis was based on a new assessment technique or model, or there is otherwise some uncertainty about the conclusions; and
- project scheduling is subject to change such that environmental effects could result.

OMP study findings indicated that 45% of the case studies involved screening studies that required compliance monitoring activities, but not full follow-up programs as defined by the Act. The remaining 55% met one or more of the above criteria for follow-up.

The OMP methodology was also designed to examine how various elements of the follow-up program were identified by the RA, that is through public consultation, baselines studies, the assessment, etc. Generally findings indicated that follow-up programs were used to address:

- short term impacts associated with construction using environmental monitors as field supervisors (Case Studies 15, 19); and/or
- permitting requirements (especially in response to enforceable regulations such as the Fisheries Act).

In fact the OMP was only able to identify 2 projects for which follow-up programs had been completed:

- *Case Study 11 (Copper Mine)*: Follow-up activities were used to consolidate the findings of monitoring activities being undertaken by a number of provincial and federal authorities. According to the RA, results indicated that mitigation measures were largely performing as had been expected.
- *Case Study 15 (Seasonal Road)*: An environmental monitor was used to ensure that mitigation measures proposed in the assessment were implemented in the field. According to the proponent, follow-up activities in the EA did not adequately detail roles and responsibilities or scheduling for project implementation. Once the EA was approved, the proponent did not use the EA as a guide during construction. As a result a number of problems were experienced during project start-up. The most serious of these (unauthorized construction of the road across several bodies of water) resulted in remedial measures costing \$1.0 million or 8.6% of the project's total capital costs. In the proponents opinion what was required was more information on roles and responsibilities as well as the establishment of an environmental monitor as a pre-condition for EA approval.

In fact, many of the comprehensive studies and all of the panels reviewed were still in the early stages of project implementation. As a result the only form of documentation available for most projects were the EA studies.

The OMP identified a number of challenges to follow-up based upon a review of EA documentation as well as through interviews:

- (i) *The role of verification in follow-up needs to be strengthened in the EA.* RAs need to develop a better understanding of the role of verification and continuous improvement in follow-up. Only one of the assessments reviewed by the OMP specifically acknowledge the role of verification as part of follow-up (Case Study 12 – Mine Decommissioning). Even in this instance the link to continuous improvement was not addressed. Most of the RA's and proponents interviewed did not seem to understand these as fundamental objectives to follow-up. Most monitoring programs developed appeared to address compliance as the key issue. The problem here is that lessons within various sectors are not captured over time. This limits the information available to conduct class EA's which capture these lessons learned and reduce associated reporting and monitoring costs over time. Thus, while lack of verification for continual improvement does not result in immediate costs to the proponent, potential cost savings from long term benefits are avoided.

(ii) *EA reports were not used to identify follow-up roles and responsibilities, schedules, and budgets nor were they formatted in a way to facilitate implementation of follow-up activities.*

(a) **Roles & Responsibilities:** Almost without exception roles and responsibilities related to follow-up activities were not presented or dealt with in the EAs evaluated by the OMP. The problem here is that the uncertainty introduced by this oversight can lead to gaps in implementing the EA's recommendations. In at least one instance this led to substantial costs incurred by the proponent during project implementation:

- *Case Study 15 (Seasonal Road):* According to the proponent, follow-up activities in the EA did not detail the types of permits to be obtained for project implementation. Once the EA was approved, the proponent did not use the EA as a guide during construction. As a result a number of problems were experienced during project start-up. The most serious of these (unauthorized construction of the road across several bodies of water) resulted in remedial measures costing \$1.0 million or 8.6% of the project's total capital costs. In the proponents opinion what was required was more information on roles and responsibilities as well as the establishment of an environmental monitor as a pre-condition for EA approval.
- The proponent in Case Study 13 (Wood Preservers) indicated in the EA that detailed plans for follow-up would be required of the tendering process upon approval of the EA. The comprehensive study does not indicate who will use the information and how it will be used for verification. The potential issue here is that without clear responsibilities being identified, managing reporting and follow-up may be difficult and that the information generated may not be made available to all interested parties.

(b) **Scheduling Follow-up Reporting Commitments:** Scheduling for reporting was almost completely absent from the EA's evaluated. This introduces an element of uncertainty with regard to if reporting will take place at all.

- *Case Study 11 (Copper Mine):* Here the RA developed a follow-up report only at the prompting of public interest groups. Given that public notification is an important element of follow-up, providing a clear reporting schedule in the assessment might have provided concerned public interest groups with greater certainty with the EA process. Instead one is left with the impression that follow reporting might not have taken place at all without the prompting of the NGO. Without the consolidation of results that took place with the development of the follow-up report it is difficult to see how lessons learned.
- *Case Study 17 (Water Diversion):* Issues of follow-up were addressed through the joint panel's recommendations for a series of mitigation progress reports. Absent in the panel report was any schedule for reporting or any indication of who would produce these reports or how they would be made available to the public. Interested

groups would have to contact the RA, and arguably a schedule would have to be developed anyway in order to track how follow-up commitments were being met.

(c) **Budgeting:** Only one case study provided specific budgets for follow-up (in other case studies this information was hidden in monitoring costs provided). It is therefore, difficult to determine the level of effort that will go into these activities, or the breakdown of these costs (i.e. how much will be spent on reporting the findings back to the public). Over the long term it will be even more difficult to quantify cost savings from continual improvement to the private sector if budgeting information is not available and tracked through assessments and follow-up reports.

- *Case Study 12 (Mine Decommissioning):* in this case the proponent provided a budget for monitoring activities over a five year period, but did not identify scheduling or reporting commitments.

(d) **Formatting:** Another challenge to implementation stems from the fact that most EAs are inconsistent in how they address follow-up activities. Information is either scattered throughout the assessment or presented in a generic enough format that it does not function as a working document for project implementation. Only one RA specifically commented on this problem, though, in our opinion it was a challenge common to all the EA's reviewed.

- *Case Study 3 (Golf Course):* Follow-up activities were conducted by an RA officer who had not participated in EA review and approval. When interviewed they stated that the structure of the EA did not facilitate monitoring and reporting on construction activities. The officer recommended that follow-up activities be summarized in an appendix that can be used as a separate document during the project's implementation.

While no specific reforms were suggested by stakeholders interviewed we feel that the results of the OMP indicate that follow-up urgently requires strengthening. Not only were problems systemic to almost all case studies for which follow-up was required, but the gaps identified potentially compromised:

- *Process benefits* by not taking advantage of the single planning window for all federal authorities to co-ordinate and develop plans for follow-up;
- *Study benefits* by not recognising where new technologies/mitigation measures or environmental settings are involved or providing a clear rationalisation for why monitoring/follow-up activities are required; and
- *Outcome benefits* by not ensuring that predicted levels of impact (positive and negative) are achieved.

The Senior Management Committee On Environmental Assessment (SMCEA) Follow-Up Sub Committee is in the process of developing a discussion paper on challenges to follow-up and

possible options to improve this process. In many cases the discussion paper addresses some of the issues raised here.

A number of reforms are possible:

- The *Responsible Authorities Guide* could be strengthened (i) by providing examples of how verification leads to continuous improvement and by (ii) linking verification to the development of class EAs. Currently the Guide merely defines follow rather than providing any discussion on its merits. Revisions could also include specific documentation requirements with regard to what elements of follow-up should be addressed in the EA report versus later stages of project implementation. The advantages of this approach are that the Guide provides the most comprehensive overview of RA responsibilities in relation to the Act. The disadvantage is that project managers may not always work with the most up to date version of the guide.
- Training programs could identify continuous verification and continuous improvement as key objectives of follow-up, taking students through a series of case studies. While this approach is targeted and probably has a high impact, it also has a limited scope. That is until everyone has taken the course, not all individuals will be aware of the need for verification and continual improvement.
- The Agency could produce a specific report on the benefits of verification and continuous improvement in a report dealing with follow-up. This information could be posted on the Act's website. The advantage of this approach is that it singles out issues related to follow-up (the Agency would profile the document as a "new" publication). Also a large number of readers have instant access to the Agencies web-site. If some of this information is contained in the *SMCEA Follow-Up Sub Committee's* report these findings could be used.
- Sectoral guides could be used to address follow-up activities with case studies specific to generic types of projects conducted by the RA.
- The Act could be re-written to more clearly link follow-up to verification and continual improvement. While legislative change is a powerful driver, it is also more difficult to implement. OMP results indicate that many RA's and proponents rely strongly on guidelines and operational policy statements to implement EAs. For this reason we do not deem legislative reform a priority.

Recommendation: In our opinion follow-up is a critical element of the Act, which needs to be strengthened is the full societal benefits of EA and the Act are to be realized. Given its importance we recommend that the Agency (i) revise the Responsible Authorities Guide to better reflect the link to verification and continuous improvement as well as to detail elements of follow-up programs to be reported on in EAs, (ii) over the medium term RA project managers and departmental experts should be targeted for further training in this area, (iii) in support of both recommendations more information needs to be collected and published on the benefits of verification for continual improvement – this information should be captured in sectoral guidelines if and when they become available. This three pronged approach will help to ensure that the broad range of challenges associated with follow-up are addressed in a comprehensive fashion.

5.2.9 *Summary of Recommendations*

In summary, after reviewing 20 case studies the OMP has identified 37 recommendations aimed at:

- Proposed policy reforms (that is improvements to regulations, guidelines and/or operational policy statements of the Act);
- Improved management of the Act's implementation; or
- Issues requiring further investigation.

Proposed Policy Reforms

The largest number of recommendations were focused on either revising the Responsible Authority's Guide or developing sectoral guidelines to assist line departments with EA implementation. Additional policy reforms were directed at developing exclusions list, operational policy statements and/or improving harmonization agreements. These are summarized below:

Responsible Authority's Guide

The Guide is considered an important tool by RA's and proponents for the preparation and management of EAs triggered by the Act. Suggested improvements to the guide included revisions that focus on:

- Clarifying the concept of *self assessment* at all three levels of assessment. Self assessment should also be linked to the delegation of RA responsibilities during EA preparation and the implications for super added responsibilities taken on during follow-up.
- Requiring that persons with *assessment expertise* to be involved in scoping decisions as well as other aspects of the EA's preparation and review.
- Providing more information on *permitting triggers* including; the range of triggers, the types of projects usually affected by these permits, the criteria used by RAs to determine whether or not they apply and subsequent incremental reporting responsibilities imposed by the Act.
- Clarifying *bump-up criteria* and information needs used for decisions to related to holding Panel reviews.
- Creating a "*pre-scoping phase*" where the RA and/or the Agency advises the proponent on early stages of a projects conceptualization and impacts on EA scoping decisions (i.e. the likelihood of permitting triggers).
- Requirements for the formal documentation, at scoping, of the *project policy boundaries* by the RA (for screenings and comprehensive studies) and the Minister of Environment (for panels) to be agreed upon and used throughout the EA process.
- Requiring RAs to provide a clear written public statement at scoping for *linking projects* (or not) under a single review.
- Promoting proactive *delegation of RA responsibilities* with regard to (a) providing ongoing assistance to proponents during EA scoping and preparation; (b) coordinating the input of other federal and provincial authorities during this period; (c) setting reasonable timelines for each stage of the review; and (iv) co-ordinating feedback to the proponent during review and approval.
- Providing more direction on information requirements of Section 16 of the Act and the relationships between these established in the assessment. In other words when does a proponent have to collect information on biophysical effects? How is this information linked to determining the significance of effects? What links should the assessment make between effects, mitigation measures and proposed follow-up measures? The Guide should also distinguish between reporting requirements for small versus large screenings and provide decision criteria for determining which is which.
- Linking *follow-up* with the concepts of verification and continuous improvement and reporting to the public.

Sectoral Guidelines

The Agency should develop sectoral guidelines in consultation with line departments to better address their EA needs. They should focus on *all* the issues recommended for the *Responsible Authority's Guide* as well as paying particular attention to:

- Addressing *permit issues* related to various classes of projects; referencing “exclusion list regulations” developed by RAs for projects that consistently invoke permitting triggers as well as criteria used by RAs to determine conditions under which other projects potentially invoke permit triggers.
- Address *super-added responsibilities* at all three levels of assessment targeting roles and responsibilities from the project manager’s perspective.
- Identifying examples of *cumulative effects* for various classes of projects.
- The benefits of verification for continual improvement and the link to *class EAs*.
- Types of activities permissible for proponents to undertake while preparing EAs for decommissioning projects.

Exclusion Lists

- Projects routinely carried out in the interest of preventing property / environmental damage, or to meet public health/safety objectives should be placed on the exclusion list.

Operational Policy Statements

- The Agency should develop an operational policy statement that identifies criteria and/or classes of projects that constitute emergencies as described under the Act.

Harmonization Agreements

- The Agency and the provincial EA authority in B.C. should allow each process to continue on a separate track at the recommendation period.

Improved management of the Act’s implementation

Another set of recommendations are focused at improving the management of the Act to ensure a greater range of benefits are realized through the EA process. The OMP identified the need for training and further promotional activities to improve RA project managers understanding of the Act. Management recommendations also focused on strengthening the role of the Agency and challenges to conducting Joint Panels. Specific recommendations include:

Promotional/communication strategy

- The Agency should strengthen its’ communication strategy for promoting the Act as well as any new regulations, guidelines and operational policy statements.

Training:

The OMP identified training as key to promoting a greater understanding of the Act and its requirements. Recommendations were made specifically with regard to developing training programs that:

- Target RA project managers.
- Improve the ability of Panel chairs to divert policy issues from project reviews.
- Explore the concept of self assessment and its links to the delegation of RA responsibilities and super added responsibilities taken on by the RA for all three levels of EA.
- Emphasize the importance of having persons with assessment expertise involved in scoping decisions as well as other aspects of the EA's preparation and review.
- Focus on the concept of follow-up, emphasizing the importance of verification, continual improvement and the communication of results with the public (including documentation needs).

Role of the Agency

The OMP also identified a stronger role for the Agency in:

- Ensuring that *super added* responsibilities are met by proponents at the comprehensive study level and in panel reviews.
- Working with RAs and Environment Canada to identify ways of *capturing EA information* for continual improvement and the development of class EAs.
- Promoting the concept of class EAs with the role of follow-up activities for verification.
- Providing some sort of early warning system for new types of projects and facilitating resolving jurisdictional issues related to super added responsibilities.

Joint Panels

- Memorandums of Understanding for Joint Panels should include provisions for conditional approval with the caveat that they only be provided where the RA is provided with an opportunity to maintain some level of oversight until these conditions are met.
- The NEB should set up a separate division within the Board to take on the full functions of RA's as intended under the Act. The CNOPB should be studied as one of several potential models for this.

Issues Requiring Further Investigation

Finally, the OMP identified three areas that require further investigation before deciding upon any one course of action. Specifically the Agency should:

- Study implications of automatic bump-up to harmonize joint federal/provincial reviews.
- Investigate the merits of ensuring that follow-up activities fall to those department's with mandated responsibilities for managing the impacts in question rather than the lead RA.
- Investigate the merits of Panels flagging policy issues during public reviews. The Agency could identify whether or not these issues (i) dealt with environmental regulations or policies, and (ii) whether or not a cabinet decision had been made or if public consultation had been carried out. A refined list of policy issues could then be sent to the Commissioner of Environment and Sustainable Development for further consideration.

Appendix 1: Screening Case Studies

Case Study 1 – Building Screening

This case study involved constructing a building on a pre-determined site. The proponent was a Crown Corporation with a strong environmental mandate. As a result they (and their consultants) voluntarily prepared a high quality screening study prior to the enactment of the Act. With the promulgation of the Act, the proponent hired two outside consultants to review their study and ensure that it had met the standards of the new Act. This was done because transfer of property from the RA to the Crown Corporation had not been finalized when the Act was triggered, despite the fact that site selection had been carried out. Notwithstanding the additional precautions of the Crown Corporation, the RA appeared to arbitrarily raise the standards of the EA report.

While the costs of preparing the assessment were reasonable - \$129,469 or 0.4% of a \$30 million project - resulting project delays were a significant burden to the proponent (\$1,679,602 - approximately 6% of total capital costs of the project). Although perhaps unavoidable, this case illustrates the importance of the RA and the proponent jointly setting the TOR for the EA prior to its implementation.

This case study also illustrates how the EA process can be perceived to potentially conflict with:

- Public policy – a decision on the site's location was made several years prior to the EA based upon political/regional considerations.
- Municipal zoning - which had not been reviewed in light of the recently promulgated *Federal Wetlands Policy*.

Since the Act was triggered after the site selection had been made, potential issues identified by the assessment could not be dealt with using alternatives. As a result, requests for mediation and the consideration of site alternatives were denied since they would have required the proponent to incur erroneous costs and possibly risk a lawsuit. This led to bad press in local media. Requests for additional information to strengthen the EA resulted in project delays and proponent costs. In spite of this the EA led to the development of mitigation measures that ended up *saving* the wetland area.

EA's should act as a crosscheck to ensure that the information available to make decisions is accurate. If the EA had raised a red flag early enough in the decision making process, both the RA and proponent might have had enough leeway to consider whether the choice of project/site was justifiable. Perhaps, if the Act had been implemented earlier in the decision-making process, many of the problems identified here could have been avoided.

At least some of the problems identified can be attributed to the fact that this project was caught by a trigger at the time of the Act's promulgation. If the RA had been present during EA start-up, it is likely that project delays could have been avoided.

Case Study 2 – Tree Clearing Screening

The RA/proponent initiated a survey of tree heights on one of a series of runways in an airport in Southern Ontario. Results indicated that hundreds of trees were in violation of the height restrictions imposed by the *Airport Zoning Regulation*. The RA clearly had a responsibility to ensure public safety. A \$467,000 project was initiated to bring the trees down to legal limits on one of the runways. The EA was carried out primarily by the project manager and the in-house EA adviser. Resulting costs (\$29,570.00 or 6.8% of the projects total capital costs) were not considered significant. Most of this represents time by the project manager and the department's EA specialist. No primary environmental data was collected to produce the screening report.

This case study raises a number of important issues:

- (i) The decision by the project manager to proceed with an EA potentially compromised the safety objectives of the AZR. The risk of a crash while conducting an assessment is likely unacceptable from a safety perspective. Impacts from tree cutting may have been likely, but justifiable under these circumstances. Relevant issues here are:
 - Whether the AZR should trigger the Act.
 - Whether assessment is the right "tool" for managing the impacts resulting from enforcing the AZR (as opposed to developing an environmental management plan).
- (i) This case study raises questions with regard to the intent of mitigation under the Act. It was clear that tree clearing activities were going to adversely affect both the local Conservation Authority as well as a Golf Course (which had leased land from the Authority). Arguably, both the Conservation Authority and their lessee (the Golf Course) should have been aware of the conditions imposed by the AZR. More importantly it is clearly not the responsibility of the RA/proponent to mitigate the impacts of enforcing this regulation. Thus, while the project manager used the EA as a tool for "buying peace" to avoid potential lawsuits, it is not certain that mitigation measures identified achieve the Act's objectives nor whether the concerns over lawsuits are justifiable. Of the total "project" costs (\$436,000) only \$26,000 or 5.9% of capital costs relate to activities such as supervising tree removal and maintenance. In other words, if the Act hadn't been triggered with the resulting mitigation measures, the value of the project would have been reduced by \$406,430 or 50% of project capital costs.
- (i) Project scoping was not adequately carried out. Subsequent surveys of the airport show other runways in violation of the AZR and that further tree cutting is required. Better project scoping may have identified the actual area in violation of the AZR. Further, there may have been cost savings realized from hiring the tree removal contractor to do one, rather than several, jobs. If further EA work had been done there are similar savings that could have been realized. In other words, some of the potential benefits of the Act were not realized.

Case Study 2 – Tree Clearing Screening (page 2)

- (iv) The quality of the screening study was poor. Not all project effects were described. Of those that were, there was no evaluation with regard to their significance, and the effectiveness of proposed mitigation measures was not adequately described. As a result, it was impossible to evaluate impacts or judge the adequacy of proposed mitigation measures. Had the outcome of the screening not favoured all parties involved, the quality of the screening might have been an issue.
- (iv) The above probably reflects the fact that the project manager has little or no experience in EA and the Act. Further, the departmental expert did not have any qualifications.
- Further training may be required for departmental experts;
 - Beyond process expertise, there was a clear lack of understanding of environmental issues. An additional consideration for RA's would then be appointing/hiring a biologist to provide this level of input; and
 - The department should re-examine how project managers interact with internal experts with regard to ensuring the quality of internal EA's.

Despite the above issues, the use of a screening report resulted in identifying the replacement of non-indigenous pine stands with local species as a result of consultation with the Conservation Authority. The result has been an expansion of locally available habitat to some species.

Case Study 3 – Golf Course Screening

The proposed \$3.0 million project involved resurfacing two greens on a golf course. The RA had a strong environmental mandate while the proponent had a strong environmental incentive (Audubon certification).

Assessment costs were \$140,874 (4.6% of total capital costs), an amount considered reasonable by the proponent. Mitigation measures identified totalled \$461,972 or 15% of capital costs and are considered reasonable, given that alternative treatment methods at places such as Swan Hills Waste Treatment Center are quite costly and require transporting contaminated soil across the province. Follow-up activities required minimal supervision by the RA during construction.

Both the RA and the proponent worked closely to determine the:

- scope of the EA;
- types of environmental effects to be studied; and
- the appropriate mitigation measures required.

Importantly, the RA worked closely with the proponent during EA preparation to refine the scope of the study as the work progressed. As a result of this co-operation, the proponent was able to submit a very strong first draft that required minimal revisions for approval.

While both the RA and the proponent were satisfied with the end results of the EA, a number of issues were identified:

- (i) The first is that one construction season was lost due to uncertainties over the trigger. Since this did not affect revenues generated by the golf course (both greens continued to operate), the only cost to the proponent were those associated with contractor equipment removal (\$10,000 or 0.3% of capital costs).
- (ii) The second is that the proponent initially chose to ignore the RA's advice by preparing two separate EAs – one for each green. This may have been due to the fact that the rationale for one EA was not made clear to the proponent. As a result of the RA working closely with the proponent, a single EA was submitted at no additional cost to the proponent.
- (iii) Finally, RA personnel involved with follow-up monitoring activities had a difficult time using the EA document as a tool for guidance/support. Since these staff had not been involved in the EA review, they were focused on compliance issues and the documents' format did not facilitate easy access to the information for which they were responsible.

Perspectives benefit analysis carried out by the OMP revealed another issue not identified by the proponent or the RA. In our opinion it is not clear that the EA process minimized any risks or that the resulting hazard management strategy was any more effective than the "do nothing option". The mercury had been in the soil for some time and had been monitored by the proponent. It was in an inorganic state that presented no immediate health risks. Further existing knowledge indicated that no risks had been clearly established from mercury uptake in plant uptake and subsequent digestion by local wildlife. Therefore burying the mercury under more soil did nothing to reduce the risk and arguably is not a significant improvement for hazard management.

Case Study 4 – Food Park Screening

Federal assistance was provided to a Provincial Crown Corporation for the establishment of a \$18.5 million food park in PEI on 57 acres of waterfront. The park provided industrial spaces for a variety of potential food processing units. Infrastructure developed includes fresh and salt water supply, roads and waste treatment facilities.

The project triggered federal and provincial EA requirements. A joint agreement was signed requiring the province to carry out coordination activities, while the federal RA would provide comments. Assessment costs were approximately \$100,000 or 0.5% of total capital costs. No significant incremental costs or issues were identified by either the proponent or the RA.

A number of observations are worth making:

- (i) The project triggered federal and provincial EA requirements – coordination by provincial, input from federal.
- (i) Given the size of the province, federal and provincial regulators as well as proponents tend to work cooperatively. In this case study, a Provincial committee was set up to assist the EA in scoping as well as providing critical input during its development. This allowed the federal authorities to work at arm's length. All parties involved felt that this approach provided increased rigor to the EA, focused environmental effects studies and reduced uncertainty for the proponent. As a result, a strong first draft was submitted that required only minor revisions for approval.
- (i) An innovative approach to managing potential downstream cumulative effects was proposed and accepted in this study. Since only a few tenants of the food park had been identified at the design stage, total impacts were unknown at the time of approval. To manage this uncertainty a loading study was conducted which could be built upon through subsequent regulatory approvals required for each tenant and through follow-up monitoring programs.
- (i) According to the RA, the only weakness is that since there is no way of ensuring that all proposed monitoring activities (i.e. those aspects that fall outside of existing regulation) will be carried out. This adds a certain degree of uncertainty to follow-up.

This case study is a good example of how successful joint assessments can result in stronger assessments while coordinating both federal and provincial regulatory requirements in a timely fashion.

Case Study 5 – CO₂ Pipeline Screening

An American proponent proposed to construct and operate a \$13.7 million pipeline to provide high pressure carbon dioxide (CO₂) for enhancing oil recovery within existing oil fields in Southeast Saskatchewan. Although the pipeline travels 270 km from its source, only 61 km of this length crosses the U.S. border and travels to a terminal facility owned and operated by a Canadian group. The RA decided to review the terminal facility as a separate project. This decision was challenged by at least one public interest group who saw the two projects as “linked”, and therefore subject to one review under the Act. The RA did not provide a rationale for its decision to the public.

A screening was carried out for the Canadian portion of the project while separate EA’s were carried out in the U.S. to meet local regulatory requirements. The assessment cost was 2.8% (or \$382,600) of total Canadian capital costs. This was considered reasonable by both the proponent and the lead RA (NEB). Further, the proponent and their consultants produced a high quality report. Since the NEB, as the lead RA, had incorporated the Act into its own legislation, it was difficult to attribute incremental costs to the Act.

A number of issues were identified by the OMP.

- (i) *Scoping and project definition:* NGO’s questioned the NEB’s decision to create two separate EA approvals for the CO₂ pipeline and the terminal facility since, their opinion, there was an interdependence in the functionality of the two physical works and they therefore comprised the same “projects”. NEB also expressed concern over the same issue, for opposite reasons. “The process made it quite cumbersome because of the potential tie with the downstream terminal facility”.
- (ii) *Federal/Provincial Coordination:* While the NEB ensured that the proper federal authorities were contacted, they did not coordinate their comments. This led to a few small delays and uncertainty for the proponent during scoping.
- (iii) *Lead RA – proponent contact:* The NEB’s role as a regulator does not allow them to work with the proponent during the EA’s preparation. This was a source of some uncertainty to the proponent. However, the formality of the NEB also created a very smooth effective process during the hearing, albeit with costs for legal representation.
- (iv) *Provincial versus federal contacts:* The proponent noted that the province was quite helpful and less formal during EA preparation while the federal departments tended to operate at arm’s length.
- (v) *Public hearings:* The NEB’s notification of a public hearing did not acknowledge that extensive public consultation had already been undertaken by the proponent. This could have potentially angered some interest groups and set the proponent up for confrontation during the hearing.

The above concerns were considered relatively minor by the proponent. By and large the process was considered to run fairly smoothly and effectively.

Case Study 6 - East African Water Pipeline Screening

This case study deals with a small scale \$22,250 pipeline project designed to bring water through a primarily agricultural area to a small village in East Africa. The proponent is a small community-based Canadian NGO with a strong community development mandate. Funding was received from the CIDA, which triggered the requirement to carry out an EA under the Projects Outside of Canada (POC) regulation.

Costs of conducting the EA represent several days of the director's time required to prepare and submit the CIDA EA screening form. Compared to the capital costs of the project (\$22,250), the EA costs (and by default the incremental costs) look relatively high (6.0% or \$1,500). This is explained by the fact that labour costs in East Africa are low and based on a weak currency. Also local communities provided in-kind contribution of resources such as land, etc. Thus, while incremental costs associated with the Act and EA preparation appear slightly higher than normal, the impact of these costs was considered insignificant by the proponent.

A few points are worth noting:

- (i) The OMP restricted its analysis to medium/large scale screenings. This case study may, in fact, be an exception. According to the RA, environmental analysis and baseline studies were not required. The screening form was used as a checklist to indicate that various environmental concerns had been considered and accounted for. This raises an interesting question with regard to the role of documentation. To an outside reader, the form does not contain enough information to assess whether environmental effects have been adequately considered or not.
- (ii) Two other pieces of information raise concern from a *procedural* point of view:
 - Clearly, the proponent did not have the expertise to collect environmental data nor determine significance/cumulative effects, given that the project took place in a primarily agricultural area. This is probably not a significant concern, though it might have been. The RA did, however, provide guidelines to the proponent for carrying out assessments for these types of projects.
 - The RA's assessment expert did not visit the site at the time of the assessments preparation to verify whether the information collected is supportable.

Given that the project took place in an agricultural area, risks of impact are low. According to the RA's environmental expert, the rationale for the approach used is to develop, over the long-term, the EA expertise in the proponent. Given the latter's involvement in community work, this guarantees that follow-up will be carried out. Also, given the nature of the NGO's approach to development, the "impacted" community will most certainly be involved in the management and execution of the project and its effects.

Case Study 6 - East African Water Pipeline Screening (page 2)

- (iii) The EA did not provide a list of relevant local legislation though it did acknowledge that a review had been made. This being said, neither the RA nor the proponent were sure of whether the country had a local EA process. Again this is likely more an issue of documentation, since a local government official assisted in the siting of the pipeline.

In the development context, significance must be given a relative weighting. One needs to keep in mind the purpose of screening studies – to review environmental consequences of decisions and determine whether the proposed action is justifiable. This project proposes to deliver water to a village and ensure a continuing supply to help to meet people's basic needs in what is primarily an agricultural area. It is likely that any impacts resulting from the project are justifiable, though better integration of the EA could only improve the proponent's capacity to carry out project planning.

Case Study 7 - Transmission Line Screening.

The proposed \$50 million Transmission Line Project involved the construction of 275 km of new single pole 138 Kilovolt power line. Although not required at the screening level, a number of energy sources were assessed (alternatives to). *Alternative means* of implementing the project included the consideration of four (4) alternative routes. Based on a comparative analysis and an evaluation of alignment options, a preferred option, with the least environmental impacts, was selected.

Normally on-reserve projects do not trigger the Act. That being said, it is the RA's policy to conduct EA's for physical works funded by the Department. These EA's *generally* follow federal environmental assessment guidelines and the Act could therefore, be said to play an unofficial role. For this particular project, part of the transmission line went off reserve, which led to the triggering of the Act. While no provincial EA processes were involved, a range of provincial and federal authorities were approached by the proponent's consultant for comment. EA costs for this project were driven solely by the Act. At \$180,00 (0.4% of total capital costs) this screening posed no significant costs to the proponent.

A few things are worth noting about this case:

- (i) Despite the fact that the RA was not present for project scoping, the proponents consultant had sufficient expertise and experience to anticipate most of the issues. The Act requires the RA to determine the scope of the project. The RA, however, does not do this as a matter of practice for on-reserve EA's. This requirement was not understood by the RA when the Act was triggered. The capital section of the department that approves the project may not be sufficiently aware of the Act's requirements to understand when to communicate with their environmental department.
- (ii) By considering alternatives to the project as well as alternative means of project implementation, the screening was conducted with the rigour of a comprehensive study, albeit without the same amount of primary data generation. By using these planning steps, the proponent was able to avoid triggering the Fisheries Act as well as many other potential impacts that would have resulted in expensive mitigation measures.
- (iii) The level of public consultation exceeded those required by the Act, in recognition of the potential sensitivities and concerns of Elders with regard to project impacts.
- (iv) Approximately 6 months elapsed from the time of EA submission to its eventual approval. This could have been an issue if project funding had been available for implementation. Reasons for this delay are unclear, given that federal and provincial comments provided during the review did not raise significant concerns.

According to the RA, the consultant produced an EA of exceptional quality. Clearly one of the reasons for smooth EA implementation demonstrated in this case study was the use of a consultant by the proponent with exceptional EA expertise at both the provincial and federal levels.

Case Study 8 – Waste Water Treatment Screening

A municipality proposed a \$40 million project to upgrade their wastewater treatment facility. Subsequently, a local industry announced a major expansion of their processing plant. This expansion required that the municipality upgrade its plans for the waste treatment facility. Since it was the processing plant expansion that necessitated the project's redesign, the industrial proponent was formally brought into the Act process as a second proponent. However, municipality undertook most of responsibilities for assessing environmental effects and preparing the screening report.

A joint assessment process was established under the Manitoba Environment Act and the Act. The federal trigger reflected the fact that the RA provided partial funding for the project (approximately \$15 million of the project's \$40 million budget).

Incremental costs were \$320,000, including \$260,000 for EA report preparation and \$60,000 for evaluation and approval. This was all for consultants (legal and environmental). Additional time was spent by senior managers to attend meetings of the coordinating committee. However, the Act was only one agenda item at such meetings and it was impossible for the proponent to estimate time spent on the Act.

Several issues are worth noting here:

- (i) The Act was successfully integrated with the overall project design and approval process. A committee was established to coordinate design and approvals. The committee included representatives from the PFRA, the provincial government, the municipality and the industry. A provincial representative chaired the committee. Among other things, the committee allocated approval studies and tasks, and implemented a Joint Consultation Plan.
- (i) The industry had held numerous meetings with the local community on the current expansion and the plant's history of problematic community relations. The consultations resulted in the adoption or explanation of a range of mitigation measures for the plant as a whole. Although these consultations were independent of the Act and not even specific to the wastewater facility upgrade project assessed under the Act, they do illustrate the increasing value the company is placing on public consultation.

Although satisfied with the overall outcome of the process, MFL entered into the process with two major concerns:

- The duplication of the Act and the provincial licensing approval process; and
- The potential for delays due to the Act.

According to the company, project delays in the order of a month or more would have imposed substantially more costs on the company than the costs of the EA. MFL reacted in several ways to help reduce the risk of project delays. First, it monitored closely the progress on EA activities assigned to PFRA. It did this largely through a legal consultant hired to assist MFL on any "process obstacles" that might have arisen. Second, MFL believed that some of the EA activities assigned to PFRA were experiencing unnecessary delays and so assumed responsibility for several studies. This involved hiring and managing a second consultant.

Case Study 9 - Flood Embankment Screening

The Dampara Water Management Project (DWMP) evolved through a regional planning process, a sub regional study and finally a project specific feasibility study. Environmental assessments and options analyses were done at every stage of this process. The DWMP is a \$4,650,000 initiative in Bangladesh which received financial assistance from Canada. The objectives of the project include relieving flooding problems and drainage congestion in the Kangsha River basin. The Project's interventions will significantly increase agricultural production, dramatically improve conditions for health care, basic education, sanitation, and shelter, create employment opportunities for farm labourers, and enhance overall economic activity through flood protection to homesteads and infrastructure.

A \$300,000 feasibility study was conducted in accordance with Flood Plan Coordination Organization's (FPCO) "Guidelines for People's Participation" and the "Manual for Environmental Impact Assessment". The RA considered the assessment manual to be more comprehensive than the Act's guidelines and operational policy statements, while public participation guidelines were considered to be sectorally/regionally specific.

Thus while total EA costs were \$41,000, the incremental costs associated with triggering the Act were only \$1,500, reflecting the time it took the EA manager to prepare CIDA's screening document.

A final Feasibility Study document was approved by the Government of Bangladesh (GOB) in July 1997. As part of this study an Environmental Management Plan was developed with:

- Mitigation Plans;
- A Disaster Management Plan;
- Social and Environmental Enhancement Programs; and
- A Monitoring Plan.

The project proposes the following structural interventions:

- Construction of 30.0 km of flood embankment along the south bank of the Kangsha River;
- Re-sectioning of 2.0 km of the Caritas Road towards Naterkona to form part of the flood embankment;
- Closing off Kalihar Channel at its outfall near the existing drainage regulator;
- Excavation of a diversion channel to connect the existing drainage regulator with Kalihar Channel;
- Refitting the Khatuair Regulator with flap gates on the downstream side;
- Construction of 4 small drainage structures and 30 Low-Lift Pump (LLP) inlet structures; and
- Re-excavation of about 10.0 km of the Dhalai Channel.

Case Study 9 - Flood Embankment Screening (page 2)

A few things are worth noting about this screening study:

- (i) The assessment tended to focus on managing socio-economic impacts rather than biophysical ones. This reflects the fact:
 - That socio-economic goals have been given a priority by the Bangladesh government and the RA for this area (according to the project manager “the benefits to people of a flood embankment were considered to far outweigh the few residual biophysical impacts from construction”).
 - This project is part of a much larger watershed management plan which will have a positive impact on the biophysical environment by arresting the degradation caused by flooding and drainage congestion.
- (ii) The Act was harmonized with the local EA requirements of the Bangladesh government resulting in a document that provided adequate information for both processes to approve project implementation in a timely fashion.
- (iii) The RA’s Environmental Assessment Officer felt that international donors were more likely to participate and make loans available to projects such as this one, where EA’s have been carried out. This reduces risk.
- (iv) The project manager felt that the Act formalized the process and provided clarity to project planning. She also felt that EA could be a very good tool in the development context, but that the level of detail in assessments was very much dependent on the project manager’s commitment to assessment.

Case Study 10 – Phosphate Mine Screening

The proponent proposed the development of a \$100 million open pit phosphate mine and processing plant. The mine will operate for 13 years in Phase 1, with an additional 20 years expected in a Phase 2. Operations will include on-site processing and waste management (including tailings) facilities. Production will be used as the main supply of phosphate concentrate to the proponent's fertilizer plant complex several provinces away.

EA costs equal \$356,250 or 0.4% of project capital costs. Since the Act was the only regulatory driver of assessment, 100% of EA costs can be attributed to the Act. Additional incremental costs reflect monitoring requirements of \$1,118,750 (1.1% of project capital costs).

Issues worth noting include the following:

- (i) The *Comprehensive Study List Regulation* did not provide clear direction for this project. As a result the proponent proposed that a comprehensive study be prepared. The RA directed the proponent, instead, to prepare a large screening, based upon a trigger associated with the *Fisheries Act*. The proponent proceeded with a "comprehensive study" approach to the assessment.
- (ii) The Act's definition of "project" captured a number of ancillary facilities including construction of (i) a new rail spur line, (ii) a natural gas pipeline, (iii) a 25kV power line and telephone line; and (iv) an upgrade to the existing fertilizer complex. Most of the additional environmental work for these facilities would have been required by other regulators. According to the proponent, the Act provided the broad planning framework as well as additional rigour to the study.
- (iii) The Act also drove the requirement to prepare a section of the report on malfunctions and accidents.
- (iv) At the time this project was proposed, there was still not enough information on *harmonization*. As a result, it was difficult to coordinate federal and provincial inputs in a timely manner. The proponent did, however, feel that the RA did a good job at coordinating comments from all parties during the review period. This reduced the amount of time associated with the review.
- (v) The proponent felt that when their project was given high priority, a senior RA contact was available to push various aspects of the EA process in a timely fashion. In later stages of the project, a more junior person was assigned, resulting in delays. This would have cost almost \$200,000 in project start-up delays if clauses had not been designed into sub-contractor agreements.
- (vi) Most of the follow-up for this project is driven by the *Fisheries Act* rather than the Act. Authorization for implementation was linked to monitoring activities required to ensure that fish habitat compensation was working and that there were no additional impacts.

Overall the proponent felt that the EA brought discipline to the project that facilitated documentation and review and certification at other levels.

Appendix 2: Comprehensive Case Studies

Case Study 11 – Copper Mine Comprehensive Study

The proponent proposed to develop a \$140 million open pit copper mine in British Columbia. Mining methods used consisted of conventional open pit methods using diesel powered front end loaders or hydraulic shovels.

The project came under review shortly after the Act was promulgated (January 1995) and the new British Columbia Environmental Assessment Act came into effect (June 30th, 1995). As a result it was the first joint provincial-federal EA; experiencing many problems associated with transition and harmonization. Some of these have likely been addressed since.

Probably the greatest difficulty experienced by this project was the late triggering of the Act, once the provincial process had already gotten underway. A number of factors explain the late engagement of federal authorities:

- (i) Since the Act had just been promulgated, there was a fair degree of uncertainty as to how it would be applied.
- (ii) Potential project effects in the watershed raised uncertainties over provincial versus federal jurisdiction. This raised uncertainties for the lead RA as to whether or not there would be federal involvement through a trigger.
- (iii) There were multiple triggers for the project. Blasting permits required another RA's participation, but they were reluctant to get involved before the proponent submitted an application. This raised the uncomfortable prospect of an additional EA later in the planning process or late revisions in the present EA's scope.
- (iv) At that point in time, Federal Coordination Guidelines had not been developed and the lead RA had an extremely difficult time getting other authorities involved and soliciting their input.

By the time the federal processes had kicked in, there were several difficulties facing the proponent and the RAs. Once the BC EA processes get underway, the strict time constraints are imposed with regard to the duration of the process.

- (i) Federal requirements, such as the resolution of fisheries habitat compensation issues are usually resolved prior to initiating any assessment or review under the Act.
- (ii) The late triggering of the Act imposed a number of additional requirements above and beyond the provincial process. These included the consideration of cumulative effects, alternatives and the development of emergency and contingency plans. This required the proponent to devote additional staff time to meeting these requirements (\$23,904). Additional scoping led to further public consultation (\$10,000).

Case Study 11 – Copper Mine Comprehensive Study (page 2)

Thus, while total EA costs were \$1,096,904, the Act imposed an additional *reporting* requirement of \$33,904. Further adding to delays to approval were the facts that:

- (i) Guidelines for cumulative effects assessment had not been developed. As a result, the proponent submitted a comprehensive study that documented the incremental impacts of mining activities on the watershed. This was disputed by both aboriginal and NGO groups as not meeting the needs of cumulative effects assessment.
- (ii) Tests done on acid rock drainage were corrupted. Rather than requiring the proponent to go back and do tests, a series of best and worst case scenarios were developed as a basis for approval. Some stakeholders disputed this as being a speculative basis for approval that undermined the rationale for carrying out an assessment.

Additional requests for information resulted in the proponent missing a construction season. Delays to construction had a number of significant financial impacts on the proponent. These include:

- The need to construct an additional road to facilitate schedule constraints (\$2.5 million);
- Flying, as opposed to shipping, a sag mill from Brazil (incremental costs of \$225,000); and
- A loss in profit from fall in copper prices (\$18,435,565).

Total incremental costs resulting from the lack of harmonization between the Act and the provincial process were \$20,968,469 or 16% of the projects total capital costs.

Two other aspects of this case study are worth noting.

The first is that a follow-up report was recently developed by the lead RA that evaluated the effectiveness of proposed mitigation measures. It consolidates the results of a number of federal authorities, but it is unclear how this will be used as part of ongoing management. It was also developed at the prompting of the Sierra Legal Defence Fund, which suggests that there had been either no plans to develop this report in the first place, or no pre-set time for its development.

Finally, there is no mechanism which ensures that detailed recommendations, as part of the project approval process, are implemented at the permitting stage at the provincial level. This becomes a federal concern where joint review processes are established.

Case Study 12 – Mining Decommissioning Comprehensive Study

This \$40 million project involved the decommissioning of a uranium mine. The mine and mill complex included an underground mine, the mill facilities where the ore was processed, and a waste management area where the tailings and mine water were deposited. A detailed decommissioning plan had been developed over a five-year period and was submitted to the RA in 1995. The project includes:

- Decommissioning and rehabilitation of the developed areas of the site;
- Securing and rehabilitation of all mine hazards;
- Securing and rehabilitation and environmental management of the tailings management facility;
- A long term care and maintenance plan for the site; and
- Long term monitoring.

The project triggered the Act under the law list. No parallel provincial processes were required though a range of other regulatory concerns drove assessment costs. The overall price of the EA ended up being \$1 million (or 2.5% of total project costs). This figure is considered on the low side required for assessments such as this one. Incremental costs attributable to the Act were \$443,750. These included (i) increased scope of public consultation, (ii) risk analysis, and (iii) design modifications all of which were considered positive features of the assessment by the proponent.

This case study shows the potential benefits to proponents from carrying out EAs linked to previous assessments. In this instance, a joint review panel under EARPGO had been conducted for several other similar mining operations in the same watershed. As a result, the proponent was able to draw upon:

- Environmental effects baseline data;
- Cumulative effects analysis;
- Public consultation records;
- Design modifications proposed as a result of the earlier review; as well as
- Aspects of the follow-up program (including monitoring of watershed impacts, etc.).

This reduced the costs of collecting data, carrying out public consultation and likely helped to avoid the project itself being bumped up to a review. Avoided costs were estimated by the proponent to be as much as \$1.0 million (equivalent to total EA costs).

A number of issues were identified.

- (i) The first concerns the Joint Review Group (originally established for the Federal EARPGO Panel) which assisted in establishing the scope of the EA and participated in its review. The group did not, however, assist the proponent during EA's preparation. Arguably some of the 6 months between submission of the first draft and the final may have been avoided if this group had been more proactive during the assessments preparation. An additional 6 months were required for posting the EA for comment (60 days), Ministerial Approval and a mandatory 3 month AECB licensing period. Resulting costs borne by the proponent over the year were site security, effluent management, site care and maintenance, utilities, an

(continued)

Case Study 12 – Mining Decommissioning Comprehensive Study (page 2)

management. While the total cost to the proponent was \$1. million p.a., it is not clear that these costs can be attributable to inefficiencies in the EA process. In fact, the only delays which appear not to be related to improving the quality of the EA relate to capacity constraints of federal and provincial governments to review drafts and return comments. Even a conservative estimate of 25% inefficiency from these delays would mean that the cost to the proponent would equal \$93,750.

- (ii) The proponent recommended that the Act be revised to allow operators to exercise their own judgement (as well as taking on the associated liabilities) in determining what activities could be implemented prior to EA approval. Further discussions with the RA, however, showed that the proponent had been permitted to continue a number of pre-decommissioning shutdown, asset recovery and tailings area preparation works while the EA studies were underway. Those activities that had been disallowed by the RA were clearly linked to the decommissioning of the mine.
- (iii) The RA viewed the comprehensive study to be its responsibility under the Act, but executed by the proponent. The rationale is that the RA ultimately takes legal responsibility for the environmental assessment and the approval of activities. As a result the RA:
 - did not allow the proponent to solicit public comment directly on the draft Comprehensive Study Report until the formal public review period (the proponent was encouraged to consult the public on the environmental issues, but not in making the final decisions on significance of the effects in the final report); and
 - was probably more willing to work with the proponent at all stages of the EA review.
- (iii) Finally, a local NGO group was concerned that approval had been granted for decommissioning activities prior to the licensing of the tailings operations being reviewed by the previous Federal Panel. Since both studies were linked with regard to their cumulative effects, the basis of the decision was unclear to the NGO. According to the RA:
 - it was the proponent's decision to seek a Decommissioning License for the mine before amending the existing Decommissioning Licenses for the other properties;
 - in the licensing of the mine decommissioning project, the AECB considered only that information from the previous studies that was technically relevant to the proponent's site, including that for evaluating the cumulative effects; and
 - the construction of the tailings areas at the other sites was substantially complete at the conclusion of the Panel review. Only an update and incorporation of the design documentation in the AECB licenses was required. The immediate priority for environmental protection in the watershed was to begin construction at the tailings area.

Case Study 13 – Wood Preservers Comprehensive Study

This \$9.3 million project involves a federal harbour with hundreds of lake and ocean-going ships travelling to it annually. The need for remedial action at the site has been well established through studies and investigations carried out over the last two decades. In 1985, the site was designated as an Area of Concern (AOC) by the International Joint Commission. Studies have indicated some sediment conditions are acutely lethal to fish and other aquatic organisms. The project involves the development of a plan to isolate the contaminant source, remediate the contaminated sediment and enhance fish habitat. Public consultation on sediment contamination around this site has been extensive and regular since 1989 under the local RAP team.

There are three triggers which invoke the Act for this project. The first is the provision of funding for the construction of a hazardous waste treatment facility by the lead RA. Two additional triggers involve:

- Fish Habitat Management for the destruction of fish habitat associated with berm construction and filling activities (section 35(2) of the *Fisheries Act*); and
- the Coast Guard for issuing a permit for limited disruption of navigation activities (section 5(1) of the *Navigable Waters Protection Act*).

The province waived its requirements for an EA on this project, accepting the Act as a substitute process.

Assessment costs, totalling \$152,500 or (%1.6 of project capital costs), were borne primarily by the lead RA. Incremental costs driven by the Act totalled \$347,500. These include the assessment (100%), \$115,000 for monitoring (surface water, sediment and berm fill), and \$80,000 for design changes in the containment berm as a result of feedback from monitoring results.

Issues raised include the following:

- (i) The EA tract was not clear at the time of project start-up. The determining factor for the RA was the type of project and the scale of the undertaking. The Comprehensive Study track was thought the most appropriate.
- (ii) Since this was the third comprehensive study ever done, there was a fair degree of uncertainty over how to proceed. The proponent/RA felt that guidelines developed subsequent to this project would probably have sped up the implementation time.
- (iii) One of the reasons that the federal process was chosen, over the provincial one, was that the requirements for studying alternatives were more flexible. The provincial process required a more detailed analysis. Since the preferred option had already been identified, the Act allowed the appropriate level of discussion, presenting a defensible position, without imposing undue costs.
- (iv) Federal authorities were able to realize a number of cost savings from the EA as a result of coordinating water quality monitoring objectives. Savings may have amounted to double or triple the \$70,000 identified for joint activities.
- (v) The remedial action plan (RAP) provided for extensive public consultation information being available to the proponent at the time of EA report preparation. This minimized the costs associated with public consultation for the purposes of developing the comprehensive study.

Case Study 14 – Site Decommissioning Comprehensive Study

The \$21,000,000 site decommissioning required the preparation of two comprehensive studies as well as two Environmental Site Investigations. Although the two sites are over 100Km apart they are considered a single project for the purpose of the Act. Following decommissioning activities management of the property will be turned over to the Federal Government Treasury Board Bureau of Real Property and Material. This agency will be responsible for determining and assessing the future use of the land and remaining buildings. Accordingly, future use of the land and the buildings does not form part of this assessment.

Incremental costs totalled \$1,261,378. These are broken down into assessment costs of \$605,670, staff overhead during review and approval costs of \$1,854, as well as a series of driven mitigation measures costing \$653,854.

Issues raised by this case study include the following:

- (i) *Demolition of some buildings was not allowed until the assessment had been completed.* The proponent had concerns about occupancy of the site by the homeless and felt that demolition of some of the buildings could have been carried out without violating the spirit of the assessment.
- (ii) *The evaluation of alternatives is not appropriate for decommissioning activities.* This is a requirement of the Act at the comprehensive study level of assessment. If, however, decommissionings were carried out as large screenings they would potentially lose the benefits of having both the Agency and other RA's providing a higher level of scrutiny to the study.
- (iii) *Baseline data identified at scoping was not incorporated into the EA, resulting in additional requests for information during EA review.* As a result, the proponent had potential deficiencies in the assessment. These potential difficulties were identified at the review stage.
- (iv) *The Agency makes it a policy to resolve issues between expert departments and the RA prior to referring their recommendation to the Minister.* Rather than delaying project implementation due to the deficiencies referred to in (iii), follow-up activities, negotiated with the Agencies' assistance, were used to address the federal authorities concerns. In this case study the proponent remains liable for any contamination after the sale or transfer of the property to another owner.
- (v) *The Cumulative effects guide was not very helpful in preparing the study.* The proponent complained that the cumulative effects guide was too general/abstract. This is a problem that was noted by a number of stakeholders and is one that could probably be remedied through the development of sector specific manuals.
- (vi) *The Critique of the draft EA by the RA was not accompanied by direction on how to address deficiencies.*
- (vii) *Review by the Agency delayed project approval, but identified several important deficiencies in the study.* Soil contamination was identified at a former 300 meter firing range. Resulting clean-up costs were \$350,000.

A final concern noted here is that transferring property to a Crown Corporation (Canada Lands Corporation) allows federal proponents to avoid dealing with issues of future use. Given the present uncertainty as to whether Crown Corporations are required to conduct assessments this gap needs careful consideration.

Case Study 15 – Seasonal Road Comprehensive Study

This \$11.4 million project involves the elimination of dredging and aids to navigation services and the construction of a seasonal road. The road will operate for 3 to 4 months during the winter and 3 months in the summers. Summer access will be restricted to all terrain freight vehicles. The 180Km route selected may be used in the future for upgrading to an all-weather road by the Province. Funding was provided by the RA, the province, Indian and Northern Affairs Canada (INAC) and a First Nations council. Construction for this project is still ongoing. A follow-up report documenting the success of mitigation measures will be submitted by the proponents consultant in the fall of 1999.

The project required approval under the Provincial Assessment Act and the Act. It was one of the first projects in the province requiring joint approval. Triggers for the Act reflect the fact that there is a potential for the seasonal road to be upgraded to an all weather road.

A number of issues were identified with this assessment:

- (i) Project scoping and follow-up did not detail the types of permits to be obtained for project implementation. What was required was more information on roles and responsibilities during this period. Once the EA was done, the proponent did not use it for project implementation. As a result, a number of problems were experienced:
 - (a) The environmental monitor required during project construction was not present for the initial period of construction. Once an inspection was carried out there were a number of problems noted on the first 30 km of road constructed including:
 - not enough riffraff on culverts – potential erosion,
 - culverts installed too high – risk of flooding; and
 - unplanned stream and lake crossing.
- The latter had the most serious impacts, requiring removal, clean-up and construction activities amounting to \$1.0 million. A concern here is that while the EA approval process is joint, the implementation of its recommendations is handled provincially.
- (i) When problems were encountered at this early stage, a conservation officer involved raised concerns about proposed construction methods approved by another branch of SERM. If the RA is delegating follow-up activities to the province, it should make sure that those involved with on site activities be involved with the EA's review and approval.
 - (i) The approach to the assessment was to focus on doing detailed studies of locations for potential stream crossings, rather than studying any terrestrial habitat. This means that:
 - there is no data on the presence or absence of potentially significant terrestrial species;
 - the EA was used to develop guidelines for project implementation; and
 - the role of planning in minimizing project risk is minimized and put on to the environmental monitor during project implementation.

Case Study 15 – Seasonal Road Comprehensive Study (page 2)

- (iv) As a result of the Act, additional consultation was required in Alberta. The provincial process would only focus on the road and any ancillary features to the road. Project scoping requirements under the Act require that the project include linked activities (in this case, cessation of barging activities in Alberta). Incremental costs were minimal. Public consultation fees were \$40,000. The incremental costs of including northern Albertan communities were minimal; amounting to only \$2,500.

The Act was identified as a driver of change in the provincial EA process. It was suggested that over time, differences between the two processes would probably disappear. For this project the Act benefits included better:

- scoping for the purposes of EA implementation;
- sequencing of EA considerations;
- direction as to how to deal with cumulative effects; as well as
- a requirement for follow-up activities.

Case Study 16 – Gold Mine Comprehensive Study

The \$250 million gold mine project combines an underground gold mine, a small open pit, and a mill using a cyanide solution process. The proponent undertook substantial public consultations and negotiations in August of 1992, several years before beginning application procedures for the project's necessary approvals. The result of the negotiations was an agreement signed between the proponent and its corporate partners, six First Nation communities, the Department of Indian Affairs and Northern Development and the Ontario Minister of Natural Resources. The agreement included a wide range of commitments covering employment, training, apprenticeships, scholarships, work schedules, firearms restrictions, access to trap lines, land access restrictions, environmental effects mitigation, and other issues. After signing the agreement, the proponent accelerated exploration in 1993 through 1994, and entered the provincial review process in the fall of 1994.

Fisheries and Oceans Canada determined that the project would result in harmful alteration, disruption or destruction of fish habitat and would have to obtain an authorization under Section 35(2) of the *Fisheries Act*. Applications for authorization involve impact assessment, mitigation of effects and compensation for lost habitat and resulted in triggering the Act under the Law List Regulations.

EA costs for this project were \$354,00. Incremental costs identified by the OMP included \$200,00 (EA start-up), \$56,000 (Act-driven mitigation measures), \$160,000 (follow-up) and \$3,000 (federal – provincial coordination).

Issues of note for this case study include the following:

- (i) While the project triggered discretionary application of Ontario's Environmental Assessment Process, the agreement signed by all parties resulted in the waiving of these requirements. This reflected the parties' comfort with the proponents' commitments within the agreement, including commitments pertaining to provision of funds for First Nations to conduct environmental studies and monitoring, local employment, local procurement contracts, compensation, and certain mitigation measures, such as avoiding the use of certain chemicals.
- (ii) While the RA tried to coordinate provincial approvals, the proponent did not consider these efforts to be essential. Further, there was some reluctance on the part of the province to coordinate more closely with the RA.
- (iii) The proponent did not anticipate triggering the Act, since the application to the RA had been made prior to the Act coming into force. As a result, project planning was already well underway when the company realized that an EA under the Act would be required.
- (iv) This was the first comprehensive study approved under the Act. There was little experience with the Act, start-up decisions were not very clear, and there were no guidelines available yet for comprehensive studies. As a result, the proponent incurred direct costs through time spent working with the RA and the Agency ensuring common expectations on the scope of the EA and effects to be assessed.
- (v) Late triggering of the Act resulted in requirements for additional public consultation, considered unwarranted by the proponent.
- (vi) Finally, the review forced the proponent to respond to public issues raised that were irrelevant, given the scope of the project.

Appendix 3: Joint Panel Case Studies

Case Study 17 - Watershed Management Panel

The proponent (a provincial government agency) requested approval for the construction of a \$57.2 million water management project to convey and store water diverted from a major river. Objectives of the project were to improve (i) instream flows/fisheries and (ii) increase economic growth through irrigated agriculture. Four interrelated components were proposed, along with a plan for operating these components. The plan is based on an assessment of the flows required to service the existing and projected license demands and other consumptive demands in the two river basins affected.

On June 15, 1998, the Panel released its report dealing with three of the four proposed project components. The report stated that proceeding with these components would have a positive effect on water quality and quantity and minimal effects on fish, fish habitat, and land. In addition, some of the adverse effects on vegetation and wildlife in the surrounding area could be reduced by using mitigation efforts. The Panel further concluded that the approved components are in the public interest and that the benefits of the project outweigh the costs.

The Panel deferred decisions on the fourth component and the plan until further information was collected and made available the following year.

Total EA costs equalled \$1.3 million (2.3% of project capital costs). Incremental costs were negligible.

Issues identified include the following:

- (i) *Harmonization:* Initially federal and provincial EA processes were conducted in parallel. Early in the process the Board identified the need for a Joint Panel; however, it took 8 months to get signed approval from the Agency. This delay reflected two difficulties in the RA's opinion. The first is the fact that federal criteria for bump-up are not well defined. As a result, the RA felt that the comprehensive study should collect further information on (i) public concerns and (ii) significant of effects. The second related to uncertainty over fiduciary responsibilities and potentially impacted First Nations. Here the question was whether or not the lead RA or DIAND assumed these responsibilities for mitigation as part of follow-up. Since the proponent was a provincial authority, the impact of this delay was a strain on the public budget as a result of decreased funds available for project implementation.
- (ii) *Project Scope:* An initial review of the proposed project resulted in a significant re-scoping of the project's design in order to meet its proposed objectives.
- (iii) *Baseline Information:* Not only did the change in scope require that additional baseline information be collected, but as a result of the review, a number of stakeholders identified the fact that existing baseline information was from non-representative years (low rainfall).
- (iv) *Conditional Approval:* As a result of this information deficiency, the Panel issued a conditional approval for project implementation. One of the peculiarities of conditional approvals is that there is no mechanism to ensure continual federal involvement when the final elements of the project are reviewed for approval.

Case Study 17 - Watershed Management Panel (page 2)

The joint review panel involved an independent provincial tribunal. One public interest group interviewed felt that the resulting process was highly litigious. As a result, they felt the process:

- obstructed the free flow of information and exchange of ideas; and
- imposed prohibitive costs – intervenor funding was only sufficient for one day of legal representation.

The provincial authority also felt that the Act did not have a strong enough presence during the hearing. They felt that there is a useful tension that exists between provincial and federal authorities that can be exploited if managed properly. The Board also noted that the basis for the Act's participant funding needed to be clearer to avoid confusion.

Finally, the Panel sequestered itself from the Secretariat. As a result information normally available to the RA was not available. There has never been a problem like this in the past.

Case Study 18 - Offshore Drilling and Natural Gas Pipeline Panel

This joint panel review dealt with two linked projects and two separate proponents.

- The first proponent proposed a \$ 2.3 billion project to development several natural gas fields off the East Coast of Canada. Gas and associated natural gas liquids will be collected from offshore production platforms and brought ashore by means of a submarine pipeline to a gas plant to be located in Nova Scotia.
- The second proponent will transport the processed natural gas via an onshore pipeline to Canadian and U.S. markets. The value of this project is \$650 million.

Both projects met the criteria for a comprehensive study under the Comprehensive Study List Regulations. They also triggered several other provincial EA processes and a number of other authorizations from a broad range of authorities. Given that each jurisdiction required a public review of both projects, an opportunity emerged to conduct a joint public review as a means of streamlining the regulatory process. In other words it would appear that both projects were reviewed under one panel for *procedural efficiency* rather than being linked as "projects" under the Act.

A decision was also made *not* to include laterals (extensions to main trunk pipeline) as part of the same EA review. Applications had not been made for these extensions and they are now being handled under separate comprehensive studies and a screening. Again, the basis of the decision seems to acknowledge the practicalities faced by the proponent with phased components of project implementation. It does, however, bring into question how practical the Act's definition of "project" is.

The review of the Project was conducted by a joint review panel to satisfy the requirements of both federal and provincial EA processes. The National Energy Board was the lead RA. Department of Fisheries and Oceans was also identified as an RA with responsibilities and permits relating to the issuance of authorizations and permits under subsection 35(2) of the *Fisheries Act* and the *Navigable Waters Protection Act*. Other federal authorities involved (i) Canadian Environmental Assessment Agency, (ii) Canada-Nova Scotia Offshore Petroleum Board (regulatory), and (iii) Natural Resources Canada. Provincial Authorities involved the Nova Scotia Department of the Environment, Nova Scotia Energy and Mineral Resources Conservation Board (regulatory) and the Nova Scotia Department of Natural Resources.

EA costs amounted to \$3,015,000 (or 0.5% of total capital costs) for the pipeline and ____% of total capital costs for the pipeline. It is worth noting that this value is for the main trunk line only. Several lateral lines planned are being assessed separately under the Act through two comprehensive studies and a screening.

The scope of the EIS was based on recommendations made by the Panels involved in the Venture Development Project (1983).

Case Study 18 - Offshore Drilling and Natural Gas Pipeline Panel (page 2)

Inefficiencies experienced at start-up reflect the fact that this is the first project of this type and magnitude to undergo the Act or any other regulatory requirements in this region. In fact, it was difficult to attribute any of these delays directly to the Act, since most involved determining various responsibilities under the NEB Act or other regulatory bodies.

Interestingly, two separate outside groups proposed "alternatives to" both projects during the hearings. It was argued that the NEB (the lead RA) should not issue a decision with regard to the two projects until such time as competing applications could be filed, heard and ready for decisions. The Panel took this matter under consideration and decided to reject the request based upon the resolution of two issues:

- (i) Public convenience and necessity test: This is essentially a matter of reasoned opinion, based upon appropriate fact, that is within the discretion of the regulatory body. It was the Panel's opinion that it was not possible to discern the pace of future development on the gas fields or which companies and arrangements may be involved with respect to future transportation of gas.
- (ii) Applicability of general principles of natural justice or procedural fairness: This relates to holding comparative hearings. The panel determined that there is neither a correlation between the public interest and the procedural right to a comparative hearing nor a public interest reason in the circumstances of this case to warrant a comparative hearing. Further delaying the hearing would be commercially prejudicial to the proponents of those projects and might violate common law (according to Wade, "Delay in performing a legal duty may also amount to an abuse which the law will remedy").

The Panel concluded in October 1997 that both projects are not likely to cause significant adverse environmental effects, provided that appropriate mitigation and Panel recommendations are followed and implemented. The Panel report contained 46 recommendations which are the basis for approval by various decision making bodies. The EA process also led to the development of an Environmental Effects Monitoring (EEM) Program and an Environmental, Health and Safety Management (EHSM) System.

Overall, proponents acknowledged that the Act had a positive influence on the planning process by:

- providing clearer working definitions for environmental effects, cumulative effects, etc. than other EA acts or federal regulations;
- harmonizing federal and provincial requirements by providing a single review period, streamlining reporting requirements, etc.;
- providing a logical sequence of steps to follow during the EA process; and
- enhancing the level of public participation during the review.

While the Act does provide for follow-up it is likely that the regulatory authority of the NEB and other decision making bodies involved will be responsible for actions taken.

Case Study 19 – Oil Pipeline Panel

The \$649,524,000 Oil Pipeline project consists of the construction and operation of approximately 435 kilometres ("km") of 610 millimeter ("mm") outside diameter pipeline in Alberta; terminal facilities; four pump stations; mainline valves; power supply facilities; construction camps; storage and work areas; access roads; and the upstream facilities that would need to be constructed to enable the Project to proceed. The system will be capable of transporting a variety of types of crude oils and will have an initial capacity of approximately 27 400 cubic metres ("m³") per day (172, 000 barrels per day ("BPD")). The pipeline would connect with a related pipeline project, which would continue to an interconnection in the U.S.

Oil pipelines more than 75 kilometres in length and constructed on a new right of way are listed on the Comprehensive Study List. The NEB, as the RA, exercised its discretion to refer the matter to the Minister of Environment for a public review of the potential environmental impacts of the project. The NEB requested that it be designated as a substitute panel pursuant to the Act. This request was rejected by the Minister of Environment. As a result, a Joint Review Panel was struck pursuant to section 40 of the Act by agreement between the NEB and the Minister of Environment with the intent of harmonizing the environmental and public review requirements of NEBA and the Act.

The Joint Agreement set out the factors to be considered during the EA and adopted the NEB *Rules of Practice and Procedure* (1995) for the purpose of conducting the public hearing. The Joint Agreement also provided for the selection of the members of the Joint Review Panel, which included two full-time members in the NEB and two members selected by the Minister of Environment (made temporary members of the NEB). Notably, the Agency's project manager felt excluded from participating from the NEB review process and felt it operated more as a substitute rather than a review panel. Roles and responsibilities of all stakeholders need to be clarified in provisions for both types of panels.

EA costs totaled \$1.7 million. Incremental costs include that of the assessment (since there were no other provincial triggers) as well as approximately \$2.5 million in legal fees associated with court challenges (see below).

A public hearing was held in Calgary from January 15 to March 7, 1996. Subsequent to the hearing the Panel prepared a report released May 10, 1996. Three of the four Joint Review Panel members concluded that the Express Pipeline Project was not likely to cause any significant adverse effects. The dissenting view stated that the recommendation of the Panel should be based upon:

- adequate information regarding environmental effects (in this member's opinion, the proponent had failed to do this from both a scientific and a legal perspective); and
- that the proposed mitigation measures should be directly linked to the aforementioned evidence (in this member's opinion, the proponent had proposed mitigation measures without adequate rationale).

Case Study 19 – Oil Pipeline Panel (page 2)

The dissenting Panel member further questioned the methods used to collect data, the quality of the data presented, as well as the conclusions derived from this data. The member also noted that the Act does not qualify *significance of effects* by saying this is something to be interpreted by the Panel. Finally this member was of the view that Express did not meet the ultimate burden of proof or the burden of persuasion necessary to prove that the environmental effects of the proposed project would be insignificant.

Two NGO groups then filed separate applications for judicial review of the Joint Panel report to the Federal Court of Appeal. The issues raised dealt with the interpretation of various sections of the Act and the application of the Act to the public hearing process. A three day hearing was held in Ottawa, which was convened on July 22, 1996. The Court rejected each argument. Subsequently, the Panel approved the project for implementation.

Case Study 20 – Offshore Oil Drilling Panel

This \$2 billion project involves developing wells using the open glory hole method. The production system is based around a new steel monohull floating production, storage and offloading vessel (FPSO) moored by means of a disconnectable turret. Higher capital costs that could not be justified by the quantity of recoverable oil precluded use of a gravity based structure. Separate conventional offshore drilling units will drill the wells. Shuttle tankers will deliver the oil from the Terra Nova site. First oil is expected in 2001, although it may be advanced to late 2000.

The project is located on the Grand Banks – historically, a major commercial fishery. The area also has a high presence of icebergs, sea ice, and severe weather conditions. An ice management plan incorporates detection, monitoring and management, including towing systems. In the event of an unmanageable iceberg hazard, the FPSO can be disconnected and moved off location.

There were two requirements for comprehensive environmental assessment – the Canada-Newfoundland Offshore Petroleum Board (CNOPB) and the Act. Nonetheless, the Canadian Environmental Assessment Agency had concerns about accepting the CNOPB's process as a substitute under Section 43 of the Act.¹ The CNOPB had never had need to apply their guidelines and hence there was uncertainty about how the CNOPB would put its process into practice. There was also reluctance on the part of the Agency and the Minister to accept a substitute process, as the Act had recently been passed and Terra Nova was one of the first assessments by review panel under the Act. For these reasons, an agreement was reached to establish a joint panel.

The proponent's main concern was the potential for delay of the project due to the triggering of the Act. One cause for concern about delays was the risk of legal challenges to any decision by the federal Environment Minister to accept the CNOPB process as a substitute for the assessment by review panel under the Act. The proponent wanted a "bullet-proof" process that would avoid litigation. In this respect, the agreement to undertake a joint review satisfied the proponent's need.¹

The interviews suggest that it is reasonable to attribute a 7-month delay in project start-up to the above three factors. The financial cost of this delay to the proponent were two-fold:

- Each one month delay in project start-up cost the owners approximately \$2 million in lost income (i.e. decline in the net present value of the project's income stream). The total loss in revenue over the 7 month delay period was estimated to be \$14 million (net present value in current dollars).
- The delay required the proponent to postpone contracting to build the FPSO vessel. When the proponent finally received project approval, market conditions in the world shipbuilding industry had changed, resulting in a rise in the cost of the vessel of approximately 10-15% (*actual cost difference confidential*).

Case Study 20 – Offshore Oil Drilling Panel (page 2)

The Act involvement in the joint EA for the Terra Nova project generated a wide range of benefits, the most important of which include increased community confidence, involvement in defining the scope and content of panel recommendations that could reduce adverse impacts from oil spills and operational discharges, and specific recommendations on cumulative effects that will set precedents for future project and may also generate specific environmental benefits. Although it is difficult quantify and monetize these benefits with available resources, a perspective analysis indicates that it is likely that, in total, these benefits are comparable to, or may exceed, the costs that are attributable to the Act. In addition, a range of benefits including a reduction in the risks of adverse impacts from operational discharges can be attributed to the joint CNOPB and Act review process.

Appendix 4: Potential Benefits from the Act

Potential Benefits from the Act

EA Requirements		Benefits	
Proponent	Responsible Authority	Public	
EA Start-up			
Harmonizing environmental regulatory and reporting requirements.	- Greater certainty over what is required by the proponent from different regulations. - Opportunity to address different regulatory requirements through single mitigation measures. - Single time and place for review. - Streamlined documentation requirements.	- Opportunity to coordinate with other regulators and link requirements. - Opportunity to identify and reduce/manage non regulated impacts through EA.	N/A
Scoping	Provides the proponent with the parameters of the EA study to be undertaken and therefore expected time and costs.	Allows various responsible authorities to express what concerns they have and how they want the EA study to meet these concerns.	N/A
EA Report Preparation			
Environmental baseline studies: Cumulative effects	- Used to identify significant effects and <i>focus</i> rest of study. - Used to develop baseline for future monitoring and environmental management plans. - Used to determine appropriateness of mitigation measures.	- Used by federal and provincial regulators to identify significant effects and <i>focus</i> rest of study. - Used to develop baseline for future monitoring and environmental management plans. - Used to determine appropriateness of mitigation measures. - This data can be used to meet other federal and provincial mandates.	Adds to local environmental and social knowledge on area.
16(1)(a) <i>environmental effects</i>			
Identifying significant environmental effects:	Allows proponent to focus mitigation measures on only those effects considered significant.	Focuses review and approval on those effects considered significant.	Allows public to focus concern on what the real issues are associated with the proposed development.
16(1)(b) <i>significance</i>			

EA Requirements	Proponent	Responsible Authority	Public
Public consultation: - Intervenor funding - Public registry - Public reviews 16(1)(c) public comments	- Improved public relations (project promotion). - Improved EA reporting through incorporation of Traditional Ecological Knowledge (TEK), etc.	Allows RA to establish level of public concern and desirability of project. Allows RA to decide whether to bump up project to more intense review.	- Intervenor funding allows for representation by members of the public and NGO groups during hearings. - Public registry ensures that the Canadian public is informed of proposed developments and associated concerns. - Increased public awareness over proposed forms of development. - Opportunity for public to provide input to decision-making process by identifying resources of concern, opportunities for avoidance, etc.
16(1)(d) mitigation measures	Adjustments can be made to a project's design which can lead to long term savings by more costly ongoing mitigation measures. Where this is not possible, mitigation measures reduce/eliminate impacts to the point where they are no longer considered significant and approval is given for project implementation. Allows significant cost savings and risk reduction for proponent by avoiding impacts.	N/A	N/A
Avoiding impacts through the consideration of alternatives. 16(1)(e) need for the project and alternatives			This provides the greatest level of certainty that protection of valued ecosystem components, heritage sites, etc. will be achieved.

EA Requirements		Benefits	
	Proponent	Responsible Authority	Public
Carrying out risk assessments.	Gives proponents greater confidence in the effectiveness of their mitigation measures.	Gives responsible authorities a greater degree of certainty and basis upon which to grant project approval.	Allow financial institutions to assess the <i>risk of providing funding</i> to proponents for proposed forms of development.
<i>Reporting Benefit</i> Follow-up.	Increasingly allows access to risk adverse forms of financing. Environmental management plans and emergency response plans allow proponents to establish roles and responsibilities with various regulators and minimize downstream risks associated with project implementation.	Follow-up programs help regulators ensure that regulatory responsibilities detailed in the EA are being met. This includes verifying predicted effectiveness of mitigation measures and continual improvement.	Follow-up plans instill a greater degree of confidence and potentially result in improved public safety.
<i>Reporting Benefit</i>	To the extent that some mitigation measures manage potential impacts to project performance, follow-up programs help to ensure project viability.	They establish roles and responsibilities which help RA's plan allocation of effort, etc.	
EA Review & Approval			
EA review and approval.	Regulatory basis for project implementation approved by the RA, providing greater certainty to the proponent.	Allows the RA to review the assessment to make sure that all super added responsibilities under the Act have been addressed.	N/A
<i>Process Benefits</i>		Allows roles and responsibilities for follow-up to be agreed upon.	

Appendix 5: Perspective Benefits Analysis

Overview: The Act and the Perspective Benefits Analysis Methodology

At the outset of the project it was anticipated that the Canadian Environmental Assessment Act would generate a wide range of project and process benefits in a number of categories. The Perspective Benefits Analysis (PBA) methodology was developed to help estimate these benefits and evaluate whether they are small, commensurate to, or large, relative to the costs associated with implementing the assessments. Implementing the PBA methodology helps support these conclusions by developing plausible benefit scenarios based on modifications in the original project proposal that were required as a result of the environmental assessment.

The results from implementing the PBA methodology in this project were fundamentally shaped by two factors: the role the Act plays within the broader field of Canadian environmental assessment legislation, and the specific framework chosen in this project for the evaluation. The following sections discuss each of these factors and their impact upon the PBA benefits results that were developed.

The Act and Canadian Environmental Assessment Legislation

Generally, an environmental assessment is required for a proposed project when it activates certain triggers. These triggers can relate to the category or categories of activity in the project proposal (e.g., mining, hydropower development, or the use of regulated materials); the project's proponents (e.g., regulated utilities); the location of the proposed project (e.g., ocean or wetlands); or any combination of the above. The Act is only one of many legislative acts or regulations in Canada with triggers that can require an environmental assessment of a proposed project. For example, the project approval guidelines of the Canada-Newfoundland Offshore Petroleum Board and the Saskatchewan Environmental Assessment Act have triggers that can require an environmental assessment of a proposed project.

What distinguishes the Act from other environmental assessment legislation in Canada is its unusually broad scope in terms of the projects that will activate its triggers and subsequently require an environmental assessment. This broad scope results from the principal trigger, which is activated by the expected involvement of any federal agency in any aspect (e.g., permitting, provision of lands, equipment, or financial support) of a proposed project. In addition, the Act is distinguished from other environmental assessment legislation by its guidelines, which require that the cumulative environmental impacts and sustainable development implications of a proposed project be evaluated and addressed in an assessment. These guidelines allow the Act to take a broader view of a proposed project's potential impact than is often possible with other legislation, which is commonly limited in the set of resources that can be addressed in an environmental assessment.

As a result of its broad scope and specific assessment guidelines, the Act effectively serves as a Canadian environmental assessment safety net. In this role, the Act has two main functions. First, it provides environmental assessment coverage to proposed project activities and geographic locations that are not covered by other legislation and regulations. Second, the Act implicitly supports project modifications required when another regulation "takes the lead" in conducting the environmental assessment for a proposed project, even though a trigger was activated. This support comes from knowing that the environmental assessment process cannot be circumvented, as the project areas and modifications addressed by the lead act fall within the scope of the Act as well.

Evaluation of the Act Benefits in an Incremental Case Study, Framework

The benefits estimates developed for the Act by implementing the PBA methodology were also strongly shaped by the evaluation framework selected for the project. This framework focused on identifying and valuing the incremental benefits that could be directly attributed to the Act in a series of case studies. This choice created the following barriers to estimating related benefits:

- In case studies where several environmental assessment regulations had triggers activated and the Act was not the "lead" in the environmental assessment, attribution of the benefits was a significant issue.
- The focus on case studies removed certain related process benefits from consideration in the development of benefits estimates.

With the focus on considering only the incremental project modifications that could be attributed to the Act, significant benefits attribution issues arose as a result of the Act's common use and perception as a "safety net" regulation. As a result of this perception and application, project modifications were often attributed to the Act only if they addressed issues beyond the scope of the other activated regulations. Thus, the more significant project modifications were often attributed to the other regulations, although the other regulations themselves sometimes evolved, in whole or in part, from the Act or its applications.

While consistent with the chosen evaluation framework, this approach can be misleading in terms of defining the Act's benefits because, given its scope, the Act could often just have easily "taken the lead" in conducting the environmental assessment and proposing project modifications. The potential impact of these attribution issues is uncertain, but it is expected to be more significant in cases where a written record detailing required project modifications is unavailable, thereby placing greater reliance upon the recollections of the proponents and regulators involved to identify the related impacts. In cases where a detailed written record of required modifications is available, the attribution issue can be addressed separately after developing benefits estimates associated with the full range of project modifications required by the environmental assessment process (see the Offshore Oil case study for an example).

PERSPECTIVE BENEFITS ANALYSIS RESULTS

A case study approach was used to identify the benefits and costs of individual environmental assessments under the Act. The Business Impact Test (BIT) and the Business Impact Cost Accounting Protocol (BICAP) were the main tools used to monitor the impacts of the Act on industry. Estimates of the incremental benefits attributable to the Act were developed using the Perspective Benefits Analysis (PBA). PBA places a direct value on (i) the risks managed through mitigation or (ii) the ecosystem components preserved. It incorporates some of the steps of traditional approaches to benefits assessment, but not the quantification techniques. Instead, the methodology combines case study information with information from the existing literature on environmental/health and other societal benefits to provide a perspective of whether the magnitude of benefits attributable to the Act is small, commensurate or large relative to its costs. Benefits were screened to identify which ones were suitable for quantification. Screening involved determining whether:

- EA produced incremental benefits likely to be associated with other EAs under the Act (i.e. Are the benefits representative?)
- the benefit was significant?
- there was sufficient data to quantify or monetize the benefit?

Some societal benefits resulting from the Act may be relatively immaterial and can be excluded without adversely affecting the analysis. Others are potentially significant, but cannot be included in the quantification because of lack of data or reliable quantification techniques. In these instances, the societal benefits are identified and characterized by the OMP, but not quantified. Screening of case studies, therefore, helps determine which societal benefits identified meet the criteria to make them suitable for quantification.

From the entire group of case studies, several conclusions emerged based on the benefits scenarios that were developed and evaluated using the PBA and from a consideration of the potential process benefits.

First, we concluded that the related incremental benefits were generally commensurate with the costs associated with conducting the environmental assessment. This conclusion was supported through the development of the following benefits scenarios (see the case study write-ups for specific assumptions and economic values used):

- Offshore Oil – prevention of future oil spills and avoided injuries to the Grand Banks fishery.
- Golf Course – benefits of reduced mercury exposure and avoided hazardous waste disposal costs.

- Site Decommissioning – protection of existing groundwater resources being utilized by the local population.

Second, we concluded that the observed process benefits were likely to be as large as the project benefits related to avoided adverse outcomes. Examples of the categories of process benefit categories that were observed in the case studies include the following:

Increased community involvement and peace of mind. The Act assessments provide a means for identifying, expressing, and incorporating community concerns in the planning stages of a project. While these benefits are difficult to quantify, they appear likely to be at least comparable to the costs of providing the opportunity.

Increased public knowledge. The Act assessments often required background surveys, and ongoing or follow-up monitoring. This information may provide a better understanding of the natural systems by defining conditions at a point in time and then observing and recording changes over time. As a result, this information may allow for more informed future resource use, allocation, and protection decisions.

Information Exchange. In some cases, the Act assessments required project modifications that resulted in a new or improved project implementation or mitigation methods (see the Golf Course case study). The Act assessments also identified concerns with prior assessment techniques. By making this information publicly available, future project proponents stand to benefit.

Consistency in Environmental Assessments. With their broad scope, the Act assessments can effectively create minimum project acceptability standards by defining the issues a similar project must address and establishing acceptable implementation and mitigation measures. These project acceptability standards increase project proponents' certainty about their likely financial obligations and inform the general public about what will be involved in similar projects.

An example of the potential magnitude of these process benefits can be seen in the Offshore Oil case study where the project proponents were allowed to incorporate the results from baseline studies conducted as part of the Hibernia development's environmental assessment. This sharing of accumulated knowledge helped the proponents avoid costs of approximately \$10 million for conducting additional baseline studies. These avoided costs were well within the range of benefits estimated for avoiding a future oil spill and potentially impacting the Grand Banks fishery resources.

Additional examples of these process benefits are presented in the Site Decommissioning case study, where minimum acceptability standards for defining baseline conditions at a potentially contaminated site are clearly being defined, and at the Golf Course site, where the final project implementation method has the potential to be transferred to other sites. In the Golf Course example these potential process benefits are clearly the major source of benefits, as no direct project benefits could be specified with any detail.

These conclusions provide strong support for the Act, especially when considering that a major source of potential benefits (the Act's impact on the type and scope of projects proposed) fell beyond the bounds of consideration in the case study framework.

Golf Course

BACKGROUND

In 1997, the Golf Course, operated by the proponent, underwent a major renovation and resurfacing to 18 holes of the resort's 27-hole golf course. Under the Canadian Environmental Assessment Act's law list and National Park provisions, an environmental assessment of the project was required.

RESOURCES AND SERVICES AT RISK

The Act assessment focused on the potential health risks to humans and animals associated with the elevated concentrations of elemental mercury in the soil of the golf course's greens. These elevated concentrations are the byproduct of the use, from the 1930s to the 1970s, of a fungicide to combat snow mold. In the early 1970s, the proponents discontinued use of the fungicide on the course. At roughly the same time, a soil analysis of the greens on the Golf Course documented the concentrations and location within the soil column of the elemental mercury. Elevated concentrations of elemental mercury were found in the soil of 17 of the 27 course greens.

Elemental mercury poses a health risk to humans and animals, primarily through ingestion. Once ingested, biophysical processes can transform elemental mercury into its potentially more harmful organic state. Microbes in soil can also transform elemental mercury into methylated compounds. Within the scope of the resurfacing and renovation project, the concern was not with ingestion of contaminated soils, but that the work could expose the contaminated soil to the air which would allow the mercury to volatilize. Once volatilized, the mercury, now in an organic chemical form, could potentially threaten human and animal health through the following pathways:

Inhalation - at risk would be project workers, golfers, and wildlife.

Bioaccumulation - at risk as a result of precipitation and migration into groundwater or the nearby river would be fish, piscivorous wildlife, and ultimately humans consuming these fish and wildlife.

However, within the scope of the resurfacing project, human and animal health appeared to be at risk if, and only if, the work exposed the contaminated soils, allowing the elemental mercury to volatilize. This conclusion can be drawn based on the results of sampling conducted on the greens in the 1970s and as part of the start-up for the resurfacing project. A comparison of the results from the two periods showed no change in the mercury concentrations, no vertical migration of the mercury in the soil column, and no conversion of the elemental mercury to methylated compounds. In other words, an essentially "static" condition existed with regard to the elemental mercury contamination at the Golf Course. The mercury-related health risks prior to the project were minimal, and a change in these risks was unlikely in the foreseeable future as long as the contaminated soil remained unexposed.

REQUIRED PROJECT MODIFICATIONS

The project modifications required as a result of the Act review are best interpreted as precautionary measures designed to, if possible, further minimize the potential risk posed by the mercury contamination. As a result, the single most important related project modification was the requirement that the greens be "capped" with an additional 50 to 75 centimetres of soil. In addition, to reduce the potential risk of the mercury being transported through the soil column and leaching into the groundwater, the Act review required that less water be used to irrigate the redesigned greens. The Act review also required the establishment of a groundwater monitoring program that would identify any change in the state of the mercury contamination, such as a migration in the soil column or the conversion of the elemental mercury to methylated compounds, in a timely manner.

In addition, the Act review required project modifications designed to mitigate for the effects of past activity on the golf course. For example, the review required that debris piles from recent projects be used to fill in borrow pits remaining from prior course modifications in order to restore the natural topography. The assessment process also addressed concerns about impacts on native wildlife by requiring the work to be undertaken in stages. Further, the assessment recommended, but did not require, that the road bordering the course and leading to a nearby waste treatment plant be closed to non-essential traffic following the golf season for the winter months to facilitate migration of wildlife, notably elk. This recommendation was adopted after the 1998 golf season.

ACT-RELATED COSTS

It was estimated that the project proponent incurred roughly \$35,000 in incremental costs that could be attributed to the Act-related environmental assessment and project modifications. Capping the greens and sequencing the work were reported to have a minimal cost impact (less than \$25,000), primarily because the contaminated soil was allowed to remain on site and clean soil for the capping was made available in other project. The remaining costs primarily reflect expenses related to performing the soil, water, and ecological analyses for the environmental assessment.

ACT-RELATED BENEFITS

The Act-related project modifications generate potential environmental and social improvement benefits, as described within the Perspective Benefits Assessment methodology. These benefits relate primarily to a reduction in the possibility of future mercury exposure through capping the greens and reduced irrigation. Benefits also result from the water monitoring program, which is designed to quickly detect any transformation and/or leaching of the mercury. The phasing of the work, borrow pit filling, and the recommendation to restrict vehicle traffic on the road bordering the course also generate benefits in this category.

In addition, the review generated process benefits, as defined within the Perspective Benefits Assessment methodology, as a result of the proponent contacting other golf course operators and sharing the capping approach it developed to address the mercury contaminated soils. While circumstances will vary from course to course, the development and sharing of this information may benefit project proponents at similarly contaminated Canadian golf courses.

QUANTIFICATION AND MONETIZATION: ARE THE BENEFITS WORTH THE COSTS?

The perspective benefits analysis methodology relies upon creating a plausible benefit scenario from available case study information to develop quantitative estimates of related benefits. These benefits can then be monetized where relevant supporting economic literature exists. A critical step in this process requires describing the nature and magnitude of potentially adverse impacts that were, or might in the future be, reduced or avoided.

While an extensive body of literature provides values for a range of health outcomes, the related change in human health associated with capping the greens is unspecified, but appears to be extremely small and possibly zero, given the initial low level of risk posed by the elemental

mercury prior to the project. As a result, a plausible benefits scenario based on changes in the risk of experiencing mercury-related health effects cannot be developed at this time.

If mercury exposures were reduced, they could be valued using estimates of the damages per pound of mercury emitted from coal-fired, oil-fired, and municipal solid waste power plants. These estimates reflect assumed medical expenses and the value of lost productivity during treatment. The estimates, which are also a measure of the benefits of controlling a pound of mercury emissions, were presented as low, midpoint, and high estimates. For all three power plant alternatives, the low and midpoint estimates were \$0. The high estimates ranged from \$60 for the coal-fired plant to \$1,190 for the municipal solid waste plant (all values in 1998 Canadian dollars). These values suggest that even if exposure reductions were realized, a strong case could be made that they would have an associated value of \$0.

However, assuming a generally risk adverse population, it seems likely that some positive value can be attributed to the precautionary measures required by the environmental assessment. This is supported by economic research demonstrating that people are willing to pay to avoid exposure to mercury. The draft version of a forthcoming report found that Minnesota residents would be willing to pay roughly \$140 per household per year (1998 US dollars) to reduce total annual mercury deposition from sources in the Midwestern United States by 50%. While this example obviously values the reduction of a much greater and widespread risk, it establishes that people are willing to pay to avoid or reduce the risk of mercury exposures. Further supporting this assumption are numerous studies in which respondents have indicated a willingness to pay to reduce uncertain risks, such as the risk in this case. For example, the Environmental Valuation Reference Inventory database identified 19 studies that incorporated the phrase "risk reduction." A review of these studies revealed that the value of risk reduction depends heavily upon the magnitude of the risk and characteristics of associated outcome. However, none of these studies were applicable to the current case, especially given the unspecified, but apparently very small, risk. As a result, no attempt is made to quantify the uncertainty reduction, but these apparent precautionary measures do have real value.

Similarly, there is literature valuing the preservation of wildlife, but the impact of the potential road closure is insufficiently specified to assign values (i.e., whether the closure will improve wildlife viewing in other areas). However, it seems likely that some individuals value measures designed to restore the natural state of the environment, whether it be the topography of the golf course or facilitating the migration of native species in the winter season. These values may in fact be accentuated because they are occurring within national parklands.

In addition to these project benefits, the review generated process benefits. Process benefits are associated with the knowledge that capping was approved as a course of action in a required environmental assessment. This knowledge may have significant benefits in terms of costs avoided developing alternatives for other project proponents in similar situations. Even a few thousand dollars saved by a few other golf courses, or eliminating mercury risks at one site where mercury may be more mobile, would result in meaningful process benefits vis-à-vis the related costs. Again, however, these benefits escape more precise monetization prior to knowledge that

other golf courses have meaningful risks, will take actions, save monies, and reduce risks based on the information provided in this case.

Despite the problems quantifying and monetizing the related benefits, it is plausible that these benefits could be comparable to the related costs for the Golf Course project. This is especially true in light of the relatively low level of the related costs and the fact that the related benefits will be realized over many years.

An alternative approach to addressing the potential related benefits is to examine the potential costs that were avoided with the development of the capping option for the contaminated soil in the greens. The other option for addressing the mercury contamination during the review of the project required removing the contaminated soil and shipping it for disposal to an appropriate hazardous waste facility.

The estimated volume of contaminated soil on the 18 greens that would have required disposal is over 2,500 cubic metres, or approximately 4,750 metric tons.¹⁶ Project staff identified the Alberta Special Waste Treatment Facility, operated by Bovar Co. in Swan Hills, Alberta, as the most likely recipient of the contaminated soils. In discussions with Bovar Co., their representative indicated that it would cost \$750 to \$950 per metric ton to dispose of soil containing elemental mercury at concentrations from 2 ppm to 10 ppm. At this price range, the total cost of disposing of the contaminated soil would be \$3.6 million to \$4.5 million, or roughly two orders of magnitude greater than the related costs. Further, this price can be considered a lower bound of total removal costs because it represents only the disposal price and ignores the labor and equipment costs that would be associated with the removal and transportation of the soil to the facility.

In this approach, the benefits associated with related project modifications are clearly far greater than the related project costs.

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¹⁶ The volume of soil to be removed is estimated by assuming that an average green is roughly circular with a 15 meter radius and that 20 centimetres of soil would be removed from each green. Total estimated volume of contaminated soil is 2,545 cubic metres. The weight of soil is estimated to be 1.9 metric tons/cubic meter, for a total of 4,836 metric tons.

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Site Decommissioning

BACKGROUND

Two sites are being decommissioned. After decommissioning, control of the land at both sites will be turned over to a crown corporation. The decommissioning process triggered the Canadian Environmental Assessment Act, which required that an environmental assessment of the proposed activities related to the decommissioning be conducted.

RESOURCES AND SERVICES AT RISKS

The assessment focused on the unknown contents of a former landfill site that was in active use from the 1960s through 1986, at which point it was filled in and subsequently used for other purposes (i.e., storage space for trucks and heavy equipment). The known contents of the landfill included construction wastes and general refuse. However, anecdotal evidence suggested that the landfill might also have been used to dispose of radioactive waste (e.g., radio tubes, dials, watches). In addition, the nearby presence of a regional medical facility created the possibility that the landfill could have been used to dispose of medical waste.

The landfill's contents were a source of concern because its contents could potentially leach into the groundwater and contaminate the aquifer used to annually provide over 800,000 cubic metres p.a. of water to 50,000 residents. In a worst case scenario, leachate contamination of the aquifer would force abandonment of its use and develop substitute surface water resources. This scenario also envisioned potential health risks from unrecognized consumption of contaminated groundwater.

ACT-REQUIRED PROJECT MODIFICATIONS

The assessment required an independent review of the environmental site investigation and risk assessment of the former landfill conducted for the decommissioning. The opinion of this review, by a consultant, was that despite the initial conclusion that the landfill was "clean", a more accurate interpretation would be that while contamination was not found at the sampled sites, contaminated areas still could exist. This opinion reflected the reviewer's concern with a range of sampling protocols, methodological issues, and assumptions used in the initial investigation.

As a result, the assessment required additional sampling and monitoring of the landfill and modeling of the relationship between the aquifer and the landfill as part of the decommissioning. The assessment also required the installation of erosion controls at the site as mitigation for potential ocean erosion.

ACT-RELATED COSTS

The incremental costs associated with the environmental assessment and resulting project modifications, including monitoring and modeling, are roughly \$660,000.

ACT-RELATED BENEFITS

The potential benefits of the related modifications to the site decommissioning are expected to fall within the environmental and social improvement category set out within the Perspective Benefits Analysis methodology. The majority of these benefits would result from a reduction in the risk of losing the use of the aquifer under the landfill. However, with the currently available information, it is not possible to accurately quantify the extent to which the additional sampling and monitoring will reduce either the potential for, or the extent and impact of, any future contamination. After discussions with the consultant, we concluded that quantitative estimates of potential risk reductions could not be developed until a more complete picture of the landfill's contents was developed.

The assessment generated additional environmental and social improvement benefits by contributing to the available knowledge about the area's ecosystem and hydrology. This increased public knowledge was developed through other studies which were conducted in support of the environmental assessment. Increased hydrological knowledge of the area will result from the required aquifer modeling and the sampling and monitoring program.

In addition, the Act is likely to generate process benefits as project managers use the site decommissioning as an example to identify issues that need to be addressed, and as an indicator

of the level of detail that needs to be provided in the original work plan of similar projects. These benefits would be realized as avoided expenses associated with follow-up testing and monitoring that was required because of unsupportable scientific conclusions in an initial assessment.

QUANTIFICATION AND MONETIZATION: ARE THE BENEFITS WORTH THE COSTS

A number of studies have estimated households' willingness to pay (WTP) for improvements in groundwater quality utilizing techniques that make their results suitable for use in a benefits transfer analysis to estimate the potential value of a risk reduction to the site aquifer. A summary of household WTP estimates from studies that used the contingent valuation method (CVM) estimating approach and that are suitable for use in a benefits transfer to evaluate the value of the reduced risk to the site aquifer is presented in Table 1.

Table 1
Contingent Valuation Method (CVM) Estimates of the Costs of Groundwater

Author, Year	Study Location	Contaminants and Valuation Scenario	Risk Reduction Valued	Average Annual Household Willingness to Pay (\$year US)	Average Annual Household Willingness to Pay (\$1998 Cdn) ^a
Rowe et al., 1985	Florida	Unspecified sources, loss of water supply	5% risk reduced to zero	\$46 (1985)	\$83
Edwards, 1988 ^b	Massachusetts	Nitrates, risk of contamination	25% risk reduced to zero	\$164 (1988)	\$263
McClelland, 1992	U.S. (national study)	Landfill leachate, loss of water supply	40% risk reduced to zero	\$86 (1991)	\$150
Clemons et al., 1995 ^c	West Virginia	Nitrates, wellhead protection program	Variable risk of nitrate contamination (10% to 90%) reduced to zero	\$21 (1994)	\$27

^a Equivalent Canadian values were calculated using the purchasing power parity index for the year of the estimate to first convert to Canadian dollars and then inflating to the 1998 equivalent using the Canadian consumer price index for all goods.

^b The WTP value for this study is an annual average from the total value discounted over a 30-year period. Therefore, \$164 per household should be considered a minimum bound.

^c This is assumed to be the average WTP value across the different risk reductions as separate estimates by level of risk reduction are not presented.

The CVM studies developed estimates of the option price the maximum sum the household was willing to pay to reduce the present risk to no risk for drinking water use. The CVM values in Table 1 range from \$27 (Clemons et al., 1995) to \$263 (Edwards, 1988). This range in part reflects the influence of site- and scenario-specific factors such as the nature of the pollutant, consumer knowledge or perception of pollution, and the probability of successful remediation.

Of the studies listed in Table 1, one study is perhaps most appropriate for use in valuing the potential risk reduction in this case study because of the low baseline level of risk presented to

respondents. It estimated the annual WTP of Miami, Florida households at \$83 (1998 Canadian dollars) to avoid having to use bottled water or other water sources as the result of groundwater contamination from landfill leachate and other sources (pesticides, fertilizers, septic wastes, etc.).

Of course, inherent uncertainty is associated with applying values obtained in one study to a different situation. The baseline risks and associated risk reductions valued in the CVM studies presented above may be much greater than what could potentially occur in terms of risk at the site. These factors suggest that the WTP values presented in Table 1 may overstate the potential household benefits for the site. On the other hand, the potential contaminants in this landfill (radioactive waste, medical waste) could increase the perceived risk associated with the site, resulting in a higher household WTP to prevent potential contamination.

Regardless, it is not hard to see that the potential benefits of the changes required at the site could potentially be far greater than the costs. The site aquifer serves approximately 50,000 people, or roughly 19,000 households (assuming an average household size of 2.6 persons). If these households value groundwater protection at the lowest rate presented above (\$27 per household per year), then the annual benefits of the added protection are \$513,000. This would result in potential benefits greatly exceeding costs within two years, and the benefits would be expected to be realized over a series of years. Alternatively, if households have a net present value for the potential risk reduction of \$35 (equivalent to an annual household value of roughly \$1.75 over 30 years with a 3% discount rate), the potential benefits would be commensurate with the identified cost of the assessment.

An alternative method for valuing the potential related benefits is to examine the costs associated with developing a replacement water source for the aquifer relative to the incremental costs the Act imposed on the decommissioning. An estimate of \$19 million was provided as the cost to develop the infrastructure alone (construction and setup) for developing surface water resources to replace the aquifer. In addition, while detailed cost estimates were not available, the district would expect to have higher annual operations costs with a surface water system, primarily because of expected higher water treatment costs. Other costs not captured in this scenario include costs for providing water in a period when the aquifer is unavailable and a surface water system is not in place, and costs associated with any health risk impacts realized during the period between contamination occurrence and detection.

Using the \$19 million estimate as a lower bound on the costs associated with the loss of the aquifer and a switch to surface water resources, the expected related benefits would be comparable to the related costs if the risk of losing the aquifer is reduced by roughly 3.5% as a result of the increased monitoring and sampling. Given the uncertain nature of the risks posed by the landfill, conclusions about the comparability of the incremental costs and benefits that can be attributed to the Act in this case study are difficult to make. However, given that the replacement costs presented are clearly lower bound estimates, the potential related benefits could be comparable to the incremental related costs.

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A SAMPLING OF REPRESENTATIVE RELATED BENEFITS THAT CANNOT BE QUANTIFIED OR MONETIZED FROM AVAILABLE CASE STUDIES

As described in the Methodology Report, the Perspective Benefits Analysis (PBA) methodology requires developing a plausible benefits scenario to quantify the related impacts of a project. Monetizing quantified benefits requires that the benefits scenario specify outcomes that have values available in the economics literature. When all of this information is available, or can be developed, as in the Offshore Oil and Site Decommissioning case studies, the PBA methodology can begin to produce monetized benefits estimates of the identified related project modifications.

However, in a number of case studies, monetized benefits estimates cannot be developed. This can occur from any combination of the following factors:

- The review produced no clearly identifiable project modifications.
- Critical impacts information (i.e., the duration, spatial extent, risk factors, affected populations) or values for the outcomes specified in the benefits scenario are unavailable or have not developed (see the Golf Course case study).

When a review requires no modifications to a proposed project, there is no basis for conducting the PBA because there is no incremental change in the project to be valued. While the direct project benefits in these situations would be zero, it can also be assumed that the related costs are very low. In these cases the potential still exists for the related benefits to be commensurate with the assessment costs, depending on the magnitude of any process benefits that are generated.

The following sections draw from case studies reviewed in Phase II of the project to illustrate how related benefits can be realized even though in the specific case study the benefits cannot be readily monetized because of a lack of critical impacts information or economic values for the outcomes.

Tree Clearing

ACT-RELATED MITIGATION AND LOCAL ECONOMIC BENEFITS

The Tree Clearing project demonstrates how CEEA reviews can generate benefits from requiring projects to undertake mitigation actions and consider the local economic impact of proposed projects. In 1996 it was realized that a large number of trees growing in the flight corridors for the site violated the height restrictions set in the Airport Zoning Regulations. The trees in violation were on land owned by the airport and the Conservation Authority and included trees on land leased to the local Golf Course. By law, these trees had to be trimmed or removed. The tree removal was of local concern because the Golf Course is a professional quality course that has hosted major tournaments in the past five years. If the removed trees were not replaced, the course would fail to meet professional standards and the CPGA could not return.

The review required the project proponents to replant low-growing native Canadian trees in the cleared areas, and undertake any additional landscaping associated with the removal of the trees on the golf course, so that the golf course could retain its professional quality. These requirements were presented as mitigation measures for the tree-trimming and removal. Requiring this mitigation, which also effectively addressed the local economic concerns about losing the ability to host future events, was not an option under the Airport Zoning Regulations.

Using the PBA, quantifying and monetizing the potential benefits of the tree replacement would have required the following information:

- A description of how the tree replacement did, or could, improve local wildlife habitat, including which species would benefit and how.
- The likelihood of future major events being scheduled for the Golf Course before the project was undertaken, and an estimate of the associated local economic impact from hosting such an event.

Given the lack of desired information, project-specific monetized benefits estimates could not be readily developed. However, while the airport primarily provides an example of how the Act required mitigation and consideration of a project's local economic impacts can generate potential benefits, it is possible to comment on the nature of these potential benefits within this case study.

With the large local forest habitat, the habitat value of the replanted acres in the airport noise area could have some, but potentially limited, wildlife benefit. However, one might wonder whether the effort and cost to develop the information needed to quantify and monetize these benefits would give information that would warrant the effort.

Similarly, while the loss of the Golf Course as a potential tour site could have significant local economic impacts, it may have minimal impact when viewed from a national perspective. From a national perspective, consistent with a national act, assuming that tournaments that would have gone to the Golf Course are played elsewhere in Canada, the potential benefits, envisioned as avoided economic losses, are likely to be minimal, if not zero.

Transmission Line

ACT-RELATED PROCESS BENEFITS

The Transmission Line project in Northern Ontario demonstrates how the Act reviews generate benefits by encouraging project proponents to incorporate the knowledge and expertise gained from the assessment and implementation of past projects into their own proposals. Under this proposal, a new, approximately 275 km long, single-pole, 138 kilovolt power line would be built. While the power line would be located largely on reserve lands, some parts would be located off the reserve lands. This, combined with expected federal funding for the project, triggered a review. It is also worth noting that the tribal governments, which have the main jurisdiction over the reserve lands, pattern their environmental assessment requirements after those set forth in the Act. Therefore, even if the Act had not been triggered, any benefits attributable to project modifications required from a tribal environmental assessment could indirectly be attributed to the Act, or reflect a knowledge transfer benefit from the Act.

The review of this project concluded that it was well planned and that the project proposal required only a few minor modifications. Among the required modifications, the following were identified as potential starting points for developing plausible benefits scenarios:

- To minimize impacts on soil and water, the review required that all vegetation removal and control efforts utilize only mechanical methods or biodegradable herbicides.
- To avoid confusing migratory birds, the review required that all substation lights be installed to point downward.

In addition, the review required the proponent to undertake a public consultation program (above and beyond that already performed by the proponent). This identified a number of concerns. Most of these concerns had already been addressed in the original proposal, and those remaining were easily addressed. Thus, with minimal additional cost, the review helped limit the use of

potentially harmful herbicides, helped protect migratory birds, and increased public confidence in the project.

The project-specific benefits associated with these modifications are difficult to quantify more precisely. The use of biodegradable herbicides reduces the threat of ground and surface water contamination and of any adverse impacts associated with exposure, but without more detailed information on the area's resources and the potential impacts of the alternative herbicide considered, these potential benefits cannot be quantified or monetized.

The benefits associated with installing the substation lights, so that they point downward, are similarly difficult to quantify and monetize. Some valuation literature exists on valuing migratory birds, but applying these estimated values to a presumed small change in the bird population would be indicative only of potential values, given differences in the study and nearby populations and differences in the injury scenarios to the birds. However, presuming that no additional costs are associated with installing the lights so they point downward rather than upward, any potential benefits support the conclusion that the related benefits are larger than the associated costs.

However, suggesting that there are no significant related benefits associated with this project would be misleading. Rather, the Act began to generate process benefits with the development of the initial project proposal.

Given the history of reviews for similar projects, the proponent hired a qualified consultant experienced with reviews to assist in developing a proposal that would satisfy the Act's requirements. The consultant reviewed several alternative sources for supplying energy (including expansion of an existing diesel generator system, small and low-head hydro, and wind energy), and the power line was determined to be the least expensive reliable alternative. Once the power line was chosen as the best option, five different routes for the power line were considered. The current route was chosen because it would have the lowest potential environmental impacts. In addition, to allay fears and ensure compliance with any local regulations, the project included extensive consultation with local tribal leaders, community groups, and federal and provincial government ministries and agencies.

This forethought and planning can be attributed to the experience of other proponents on earlier projects that were required to undergo an assessment. The planning for environmental effects before the project ever reached the review stage presumably helped the proponents avoid costs associated with unexpected delays and project modifications. Within the framework laid out in the original PBA methodology, these benefits would clearly be categorized as process benefits. Additional process benefits were realized by the Canadian government because the review required for this project was quick and inexpensive. Finally, because it encountered minimal delays and modifications, this project will likely serve as an example for future project proponents, thereby generating process benefits into the future. While these process benefits cannot be accurately quantified, they certainly exist and are substantive.